EPA/ROD/R05-86/034
1986

EPA Superfund
Record of Decision:

FOREST WASTE PRODUCTS
EPA ID: MID980410740
OU 01
OTISVILLE, MI
06/30/1986

FOREST WASTE DISPOSAL SITE
GENESEE COUNTY, MICHIGAN.

#DR
DOCUMENTS REVIEWED

I AM BASING MY DECISION ON THE FOLLOWING DOCUMENTS DESCRIBING THE ANALYSIS OF COST-EFFECTIVENESS OF REMEDIAL ALTERNATIVES FOR THE FOREST WASTE DISPOSAL SITE:

- SITE LAGOONS PHASED FEASIBILITY STUDY, FOREST WASTE DISPOSAL SITE, OTISVILLE, MICHIGAN, CH2M HILL, APRIL 8, 1986

- SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

- RESPONSIVENESS SUMMARY

- MEMORANDUM FROM ROBERT B. SCHAEFER, REGIONAL COUNSEL AND BASIL G. CONSTANTELOS, DIRECTOR, WASTE MANAGEMENT DIVISION, TO VALDAS V. ADAMKUS, REGIONAL ADMINISTRATOR, "REQUEST FOR CONCURRENCE ON THE RECORD OF DECISION FOR AN OPERABLE UNIT REMEDIAL MEASURE AT THE FOREST WASTE DISPOSAL SITE, OTISVILLE, MICHIGAN", JUNE 27, 1986.

#DE
DECLARATIONS

CONSISTENT WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, AND THE NATIONAL CONTINGENCY PLAN (40 CFR PART 300), I HAVE DETERMINED THAT EXCAVATION, TREATMENT, AND OFFSITE DISPOSAL AT A RCRA PERMITTED FACILITY OF CONTAMINATED SLUDGES, SEDIMENT, AND SOIL; AND REMOVAL, TREATMENT, AND OFFSITE DISPOSAL AT A RCRA TREATMENT FACILITY, OF AQUEOUS LAGOON WASTES, IS A COST-EFFECTIVE SOURCE CONTROL OPERABLE UNIT REMEDIAL MEASURE AND PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH, WELFARE, AND THE ENVIRONMENT. THE STATE OF MICHIGAN HAS BEEN CONSULTED AND AGREES WITH THE APPROVED REMEDY.

I HAVE ALSO DETERMINED THAT THE ACTION BEING TAKEN IS CONSISTENT WITH PERMANENT REMEDY AT THE SITE, AND IS APPROPRIATE WHEN BALANCED AGAINST THE AVAILABILITY OF TRUST FUND MONIES FOR USE AT OTHER SITES.

IN THE EVENT THAT, AT THE TIME THE FOREST WASTE OPERABLE UNIT IS READY FOR CONSTRUCTION, THE COST OF TRANSPORTING THE WASTE TO THE NEAREST RCRA DISPOSAL FACILITY IN COMPLIANCE WITH THE OFF-SITE POLICY EXCEEDS THE COST ESTIMATE IN THE PHASED-FEASIBILITY STUDY BY GREATER THAN 50%, I WILL RECONSIDER THE RECORD OF DECISION TO DETERMINE IF THE SELECTED ALTERNATIVE STILL REPRESENTS THE COST-EFFECTIVE REMEDY AND TAKE APPROPRIATE ACTION AT THAT TIME. THE STATE OF MICHIGAN WILL BE CONSULTED IN THE EVENT THAT I RECONSIDER MY DECISION.

THE U.S. ENVIRONMENTAL PROTECTION AGENCY (U. S. EPA) IS CONTINUING ITS REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) OF THE FOREST WASTE DISPOSAL SITE, TO EVALUATE THE NATURE AND EXTENT OF CONTAMINATION AT THE SITE, IN ORDER TO EVALUATE POTENTIAL REMEDIAL ACTIONS. FOLLOWING THE EVALUATION OF ADDITIONAL REMEDIAL ACTION(S), A RECORD OF DECISION WILL BE PREPARED FOR APPROVAL OF THE FUTURE REMEDIAL ACTION(S).

JUNE 30, 1986
DATE

VALDAS V. ADAMKUS
REGIONAL ADMINISTRATOR
U.S. EPA, REGION V.

NARRATIVE SUMMARY

#SLD
SITE LOCATION AND DESCRIPTION

THE FOREST WASTE DISPOSAL SITE IS LOCATED AT 8359 EAST FARRAND ROAD, OTISVILLE, MICHIGAN. THE SITE IS IN THE SOUTHEAST CORNER OF SECTION 8, FOREST TOWNSHIP (TN9, R8E), GENESEE COUNTY, MICHIGAN, AS SHOWN IN FIGURE 1. THE SITE IS APPROXIMATELY 12 MILES NORTHEAST OF FLINT, AND APPROXIMATELY 2 MILES NORTHWEST OF THE CITY OF OTISVILLE. A SCHEMATIC MAP OF THE SITE IS SHOWN IN FIGURE 2.

THE TOTAL SITE AREA IS APPROXIMATELY 112 ACRES. THE SITE HAS A LANDFILL WITH A SURFACE AREA OF APPROXIMATELY 15 ACRES, AND NINE SURFACE IMPOUNDMENTS (HEREINAFTER LAGOONS) WITH A COLLECTIVE SURFACE AREA OF APPROXIMATELY ONE ACRE.

THE SITE IS IN A SPARSELY POPULATED AREA. THE AREA SURROUNDING THE SITE IS ABOUT 50 PERCENT AGRICULTURAL AND 50 PERCENT UNDEVELOPED. AN ESTIMATED 20-30 HOUSEHOLDS ARE WITHIN A QUARTER MILE OF THE SITE. THE SITE IS GENERALLY FLAT EXCEPT FOR SLIGHT IRREGULARITIES IN THE LAND SURFACE WHERE WASTES WERE DEPOSITED. GRASS AND WEEDS, LOW SHRUBS, AND A FEW SCATTERED TREES DESCRIBE THE VEGETATION AT THE SITE. THERE IS A TREE LINE TO THE EAST, NORTH, AND WEST, AND CROPLAND TO THE NORTH AND NORTHWEST. A MARSHY REGION LIES EAST OF THE SITE. BUTTERNUT CREEK FLOWS PAST THE SOUTHEAST CORNER OF THE SITE AND CONTINUES SOUTHWEST, DISCHARGING INTO THE FLINT RIVER.

BORING LOGS FROM RESIDENTIAL AND GROUNDWATER MONITORING WELL INSTALLATIONS INDICATE APPROXIMATELY 150 FEET OF DRIFT OVERLYING BEDROCK IN THE VICINITY OF FOREST WASTE DISPOSAL. THE DRIFT IN THE AREA, COMPOSED OF SAND AND GRAVEL IN A CLAY MATRIX, IS TYPICAL OF MORAINAL DEPOSITS. THE BEDROCK IS COMPRISED OF INTERBEDDED SANDSTONE AND SHALE WITH SOME LIMESTONE AND COAL.

THE BORING LOGS FROM MONITORING/OBSERVATION WELL INSTALLATIONS INDICATE THAT THE SITE-SPECIFIC GEOLOGY CONSISTS OF A LAYER OF CLAY WITH SILT, SAND, AND SOME GRAVEL VARYING FROM 7 TO 13 FEET IN THICKNESS, UNDERLAIN BY A 10 TO 20 FOOT LAYER OF SAND WITH SOME SILT AND CLAY. THIS SAND LAYER IS UNDERLAIN BY VARYING AMOUNTS OF SAND, SILT, AND SOME GRAVEL IN A CLAY-RICH MATRIX. THE THICKNESS AND CONTINUITY OF THESE GENERALIZED HORIZONS WILL BE BETTER DEFINED FOLLOWING COMPLETION OF REMEDIAL INVESTIGATION ACTIVITIES AT THE SITE.

STATIC GROUNDWATER LEVEL MEASUREMENTS IN SHALLOW MONITORING WELLS ONSITE RANGE FROM 8 TO 30 FEET (APPROXIMATE AVERAGE 17 TO 18 FEET) BELOW THE GROUND SURFACE, AND INDICATE THAT SHALLOW GROUNDWATER FLOW IN THE AREA OF THE LAGOONS IS TOWARD THE EAST.

FOUR OF THE NINE LAGOONS STILL CONTAIN LIQUID (LAGOON NOS. 2, 3, 4, AND 8). LAGOONS NO. 2, NO. 3, AND NO. 4 HAVE LIQUID DEPTHS OF APPROXIMATELY 6 INCHES. LAGOON NO. 8 HAS A LIQUID DEPTH OF APPROXIMATELY 1/2 TO 1-FOOT. THE REMAINING FIVE LAGOONS ARE DRY OR CONTAIN ONLY RESIDUAL SLUDGE. SLUDGE THICKNESSES IN LAGOON NOS. 2 THROUGH 9 GENERALLY VARY BETWEEN 6 INCHES AND 2 FEET, WITH A COMMON THICKNESS OF ABOUT 1 FOOT. THE EXISTING TOPOGRAPHY IN THE LAGOON AREA IS SHOWN IN FIGURE 3.

IN ADDITION TO WASTE DISPOSAL, THE SITE WAS SIMULTANEOUSLY USED AS AN AIRPORT. STRUCTURAL FEATURES ON THE SITE INCLUDE AN OFFICE BUILDING, AIRPLANE HANGAR, AND A MOBILE OFFICE TRAILER USED FOR RI ACTIVITIES, AS WELL AS A CONCRETE RUNWAY AND A GRASS RUNWAY.

#SH
SITE HISTORY

FOREST WASTE DISPOSAL IS NOW CLOSED. IT WAS ORIGINALLY LICENSED TO ACCEPT GENERAL REFUSE ON SEPTEMBER 13, 1968. HOWEVER, THE HOLDER OF THE LICENSE, RONALD FERGUSON OF RICHFIELD DISPOSAL, NEVER OPERATED THE SITE.

AN ORDER OF DETERMINATION WAS ISSUED BY THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES (MDNR) WATER RESOURCES COMMISSION ON DECEMBER 21, 1972 TO PROPERTY OWNERS WALTER AND ELAINE RIX TO RECEIVE LIMITED TYPES OF LIQUID INDUSTRIAL WASTE IN ACCORDANCE WITH MICHIGAN ACT 245, PUBLIC ACTS OF 1929, AS AMENDED. SUBSEQUENTLY, UNDER

MICHIGAN ACT 87, P.A. 1965, LICENSES WERE ISSUED TO THE PROPERTY OWNERS TO RECEIVE GENERAL REFUSE, AND INDUSTRIAL AND LIQUID WASTE FROM DECEMBER 10, 1973 TO SEPTEMBER 1, 1978. DURING THIS TIME, THE LANDFILL WAS ALSO GRANTED PERMISSION TO ACCEPT, ON OCCASION, HAZARDOUS WASTES (I.E., POLYBROMINATED BIPHENYLS (PBB), POLYCHLORINATED BIPHENYLS (PCB)) UNDER MDNR AND GENESEE COUNTY HEALTH DEPARTMENT (GCHD) SUPERVISION. THE EXACT DATE ON WHICH THE FOREST WASTE DISPOSAL SITE BEGAN ACCEPTING WASTE IS NOT KNOWN, BUT IT IS THOUGHT TO BE NO SOONER THAN WHEN THE LICENSES WERE ISSUED.

IN 1974, THE FACILITY ACCEPTED SLUDGE AND RESIDUAL WASTE FROM THE AGRICO CHEMICAL WAREHOUSE OF BRIDGEPORT, MICHIGAN. LIKEWISE, PCB AND PBB WERE DISPOSED OF AT THE SITE IN 1975.

IN 1975, MR. RIX DIED AND OWNERSHIP OF THE LANDFILL WAS ASSUMED BY MRS. RIX, WHO CURRENTLY RESIDES IN FLORIDA. THE SITE LICENSE WAS REVIEWED FOR RENEWAL IN 1978; THE GCHD DID NOT GRANT RENEWAL DUE TO OPERATIONAL AND VARIOUS OTHER VIOLATIONS. AS A RESULT, MRS. RIX WAS ORDERED TO PROPERLY PHASE OUT THE SITE ACCORDING TO THE GUIDELINES ESTABLISHED UNDER THE MICHIGAN SOLID WASTE MANAGEMENT ACT.

DURING OPERATION OF THE SITE, INCOMING WASTES TO THE LANDFILL WERE NOT SCREENED BY THE FACILITY OWNER. DRUMMED WASTES FROM VARIOUS SOURCES, INCLUDING BERLIN AND FARRO INCINERATION, WERE DISPOSED OF IN THE LANDFILL AREA. THE WASTE FILL IS COVERED, ALTHOUGH REFUSE AND RUSTY DRUMS ARE EXPOSED IN SOME PLACES.

MICHIGAN DNR FILES INDICATE THE LAGOONS ORIGINALLY ACCEPTED METALLIC SLUDGES, WHICH WERE TO BE PRETREATED BEFORE RECEIPT ONSITE; AND ACIDIC AND BASIC LIQUIDS, WHICH WERE TO BE NEUTRALIZED BEFORE SHIPMENT TO THE SITE.

SEVERAL TYPES OF WASTES HAVE BEEN DOCUMENTED AS BEING ACCEPTED AT THE SITE AND ARE SUSPECTED OF BEING DISPOSED OF IN THE ONSITE LAGOONS. THEY ARE AS FOLLOWS:

WASTE OILS	SEPTIC TANK WASTE
PLATING WASTE	PHOSPHATE-ZINC WASTES
METAL SLUDGES	SPENT SULFURIC ACID
BREWERY WASTE	CAUSTIC PIPE CLEANING WATER
SEWAGE SLUDGE	SAUERKRAUT BRINE
RESIN AND PAINT WASTES	FLY ASH.

AMONG THESE WASTES SUSPECTED OF BEING DISPOSED OF IN THE ONSITE LAGOONS ARE WASTES CURRENTLY LISTED IN THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) REGULATIONS 40 CFR PART 261 SUBPART D AS HAZARDOUS.

INFORMATION ABOUT LAGOON WASTE IS NOT COMPLETE ENOUGH TO DETERMINE THE SPECIFIC U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA) HAZARDOUS WASTE NUMBER OF THE SUSPECTED LISTED WASTES. HOWEVER, WASTE SUCH AS ELECTROPLATING WASTE AND SPENT SULFURIC ACID WERE LIKELY DISPOSED OF IN THE LAGOONS, AND THESE PARTICULAR WASTES MAY BE LISTED WASTES. MDNR FILE INFORMATION INDICATES THE FACILITY OPERATOR MIXED DIFFERENT WASTE STREAMS IN SOME OF THE LAGOONS.

IN DECEMBER 1982, THE FOREST WASTE DISPOSAL SITE WAS PROPOSED FOR INCLUSION ON THE SUPERFUND NATIONAL PRIORITIES LIST (NPL). ON SEPTEMBER 8, 1983, THE SITE WAS LISTED AS FINAL ON THE NPL.

IN JANUARY 1984, A REMEDIAL ACTION MASTER PLAN (RAMP) FOR THE FOREST WASTE DISPOSAL SITE WAS COMPLETED BY U.S. EPA CONTRACTORS. THE RAMP IS A PLAN FOR UNDERTAKING REMEDIAL INVESTIGATION (RI) ACTIVITIES AND IDENTIFYING APPROPRIATE INITIAL REMEDIAL ACTIONS AT A SITE.

ON MARCH 7, 1984, THE U.S. EPA ISSUED A UNILATERAL CONSENT ORDER, PURSUANT TO THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) 106, 42 U.S.C. 9606, TO MRS. ELAINE RIX, INSTRUCTING HER AS OWNER OF THE SITE TO CONSTRUCT A FENCE AROUND THE PERIMETER OF THE CONTAMINATED AREAS OF THE SITE AS AN INITIAL REMEDIAL MEASURE. IN RESPONSE TO THE ORDER, MR. DAVID NEWLAND, ATTORNEY FOR MRS. ELAINE RIX, STATED THAT THE OWNER DID NOT POSSESS SUFFICIENT FUNDS TO COMPLETE CONSTRUCTION OF THE FENCE.

IN SUMMER OF 1984, A FENCE SURROUNDING THE SITE WAS INSTALLED BY THE U.S. EPA SUPERFUND ENVIRONMENTAL SERVICES DIVISION, SPILL RESPONSE SECTION. THE FENCE WAS CONSTRUCTED AS AN INITIAL REMEDIAL MEASURE, TO

ALLEVIATE THE PUBLIC HEALTH THREAT POSED BY THE PRESENCE OF HAZARDOUS MATERIALS ON SITE. TO DATE, THIS HAS BEEN THE ONLY RESPONSE ACTION TAKEN AT THE SITE.

IN FALL OF 1984, RI FIELD WORK COMMENCED AT THE SITE. COMPLETION OF RI FIELD ACTIVITIES IS TARGETED FOR FALL, 1986.

#CSS
CURRENT SITE STATUS

PERTINENT INFORMATION ABOUT THE NATURE AND EXTENT OF CONTAMINATION WITHIN AND SURROUNDING THE SITE LAGOONS INCLUDES:

1) ANALYTICAL RESULTS FROM LAGOON SAMPLES COLLECTED AND ANALYZED BY MDNR IN 1978 AND 1979 FOLLOWING SITE CLOSURE (SEE TABLES 1 AND 2).

2) ANALYTICAL RESULTS FROM ADDITIONAL LAGOON SLUDGE AND WATER SAMPLES COLLECTED BY MDNR AND U.S. EPA IN 1983 (SEE TABLES 3 AND 4), AND

3) ANALYTICAL RESULTS FROM U.S. EPA SUPERFUND RI ACTIVITIES.

RI FIELD ACTIVITIES ADDRESSING THE LAGOONS WERE COMPLETED DURING OCTOBER 1984. ACTIVITIES INCLUDED COLLECTING AQUEOUS LAGOON SAMPLES, LAGOON SLUDGE, SEDIMENT, AND SOIL SAMPLES, AND AN OIL SAMPLE FROM LAGOON NO. 8'S WATER SURFACE.

SAMPLES COLLECTED AND ANALYZED IN INITIAL RI ACTIVITIES INCLUDE:

- COMPOSITE SEDIMENT SAMPLES FROM LAGOON NOS. 2, 3, AND 4. A GRAB SEDIMENT SAMPLE FROM LAGOON NO. 8
- AQUEOUS LAGOON GRAB SAMPLES FROM LAGOON NOS. 2, 4, AND 8
- AN OIL SAMPLE FROM ABOVE THE AQUEOUS LAYER IN LAGOON NO. 8
- COMPOSITE SOIL SAMPLES FROM DRY LAGOON NOS. 1, 5, 6, 7, AND 9.

ADDITIONAL RI ACTIVITIES WERE CONDUCTED DURING THE SUMMER OF 1985. THESE INCLUDED SAMPLING OF SURFACE SOILS FROM AREAS CONSIDERED TO REPRESENT BACKGROUND CONDITIONS. THESE SAMPLES LOCATIONS ARE SHOWN IN FIGURE 4.

ANALYSIS OF THE SAMPLES COLLECTED DURING THE RI INDICATES THE PRESENCE OF SEVERAL PRIORITY POLLUTANT COMPOUNDS IN THE AQUEOUS LAGOON SAMPLES AND THE LAGOON SEDIMENT SAMPLES. RESULTS OF THESE ANALYSES ARE PRESENTED IN TABLES 5 THROUGH 9. FOR COMPARISON, INORGANIC CONSTITUENT CONCENTRATIONS REPORTED IN THE BACKGROUND SURFACE SOIL SAMPLES ARE PRESENTED IN TABLE 10. PRIORITY POLLUTANT ORGANIC COMPOUNDS WERE NOT DETECTED IN THESE SOIL SAMPLES.

ORGANIC COMPOUNDS DETECTED IN THE AQUEOUS SAMPLES INCLUDE TRANS-1, 2-DICHLOROETHENE, METHYLENE CHLORIDE, 2,4-DIMETHYL PHENOL, ISOPHORONE, SEVERAL PHTHALATE COMPOUNDS. INORGANICS DETECTED INCLUDE ANTIMONY, ARSENIC, BARIUM, AND ZINC.

ANALYSIS OF SOIL SAMPLES FROM THE DRY LAGOONS DID NOT DETECT ORGANIC PRIORITY POLLUTANT CONTAMINATION. RESULTS FROM ORGANIC ANALYSIS OF SEDIMENT SAMPLES ARE QUESTIONABLE BASED ON QUALITY ASSURANCE/QUALITY CONTROL REVIEW COMMENTS REGARDING THE USABILITY OF THESE LABORATORY DATA. THE ORGANIC LAGOON SEDIMENT SAMPLE DATA, THEREFORE, ARE NOT EMPHASIZED IN THE PUBLIC HEALTH EVALUATION OF THE SITE LAGOONS. INORGANICS REPORTED AT RELATIVELY HIGH CONCENTRATIONS IN BOTH SEDIMENT AND SOIL INCLUDE ANTIMONY, BARIUM, CHROMIUM, LEAD, NICKEL AND ZINC.

THE FOREST WASTE DISPOSAL REMEDIAL INVESTIGATION (RI) IS NOT YET COMPLETE AND THE EXTENT OF SITE CONTAMINATION IS NOT YET FULLY DEFINED. RI DATA TO DATE, HOWEVER, INDICATE THAT THE LAGOON WASTES ARE A

SOURCE OF CONTAMINATION TO THE UNDERLYING GROUNDWATER. LOW LEVEL AMOUNTS OF VOLATILE ORGANIC COMPOUNDS HAVE BEEN DETECTED IN THE SHALLOW AQUIFER UNDERLYING THE LAGOONS (SEE TABLE 11). FIGURE 5 ILLUSTRATES THE LOCATIONS OF THE MONITORING WELLS.

THREAT TO PUBLIC HEALTH

IN ORDER TO ASSESS THE HUMAN HEALTH THREAT POSED BY THE SITE CONTAMINANTS, CARCINOGENIC POTENCY FACTORS (CPF) AND ACCEPTABLE DAILY INTAKE (ADI) VALUES WERE EVALUATED. THESE VALUES WERE OBTAINED FROM VARIOUS U.S. EPA OFFICES SUCH AS THE OFFICE OF EMERGENCY AND REMEDIAL RESPONSE, THE ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE, AND THE CARCINOGEN ASSESSMENT GROUP. THE VALUES WERE THEN UTILIZED IN TWO DIFFERENT EXPOSURE SCENARIOS: A RESIDENTIAL SCENARIO AND A RECREATIONAL SCENARIO. THE RESIDENTIAL SCENARIO PRESENTS MORE FREQUENT HUMAN EXPOSURE TO SITE CONTAMINANTS THAN THE RECREATIONAL SCENARIO.

THE ADI AND CPF VALUES WERE USED ASSUMING DIFFERENT INGESTION RATE VALUES OF CONTAMINATED LAGOON SEDIMENTS/SOILS FOR ADULTS AND CHILDREN IN THE RESIDENTIAL AND RECREATIONAL SCENARIOS. AN INGESTION RATE OF 0.1 G/DAY WAS ASSUMED FOR A 70 KG ADULT. INGESTION RATES OF 0.1 G/DAY, 1.0 G/DAY AND 10 G/DAY WERE ASSUMED FOR A 10 KG CHILD.

THREE OF THE CHEMICALS FOUND IN THE FOREST WASTE SITE LAGOONS ARE SUSPECTED OR PROVEN HUMAN CARCINOGENS (TRICHLOROETHENE, TETRACHLOROETHENE, AND BENZENE). FOR EACH IDENTIFIED CARCINOGEN, AN EXCESS LIFETIME CANCER RISK IS CALCULATED. EXCESS LIFETIME CANCER RISK IS DEFINED AS THE INCREMENTAL INCREASE IN THE PROBABILITY OF DEVELOPING CANCER COMPARED TO THE BACKGROUND PROBABILITY (I.E., IF NO EXPOSURE TO SITE CONTAMINANTS OCCURRED). FOR EXAMPLE, A 10-6 EXCESS LIFETIME CANCER RISK WOULD REPRESENT THE RISK RESULTING FROM AN EXPOSURE THAT IS ASSOCIATED WITH AN INCREASE IN CANCER INCIDENCE BY ONE CASE PER MILLION PEOPLE EXPOSED.

CANCER RISKS UNDER THE RESIDENTIAL AND RECREATIONAL SCENARIOS WERE DERIVED BASED ON CONSERVATIVE ASSUMPTIONS REGARDING SEDIMENT INTAKE. THE RESIDENTIAL SCENARIO ASSUMES FREQUENT EXPOSURE TO THE SEDIMENTS THROUGHOUT A LIFETIME AND FOR A 10 KG CHILD. LIFETIME AVERAGE SEDIMENT INGESTION RATE IS ESTIMATED FOR 70 YEAR LIFETIME. SEDIMENT EXPOSURE IS ASSUMED SEVEN DAYS PER WEEK, SIX MONTHS PER YEAR.

THE RECREATIONAL SCENARIO ASSUMES INTERMITTENT EXPOSURE TO THE SEDIMENTS FOR A 10 KG CHILD AND FOR A 70 KG ADULT. SEDIMENT EXPOSURE IS ASSUMED TWO DAYS PER WEEK, 6 MONTHS PER YEAR.

THE ORGANIC ANALYSIS DATA, GENERATED BY MDNR IN 1983, FROM LAGOON NO. 2 FOR THE THREE CARCINOGENS, WAS USED TO DERIVE EXCESS LIFETIME CANCER RISK VALUES. THIS REPRESENTS THE HIGHEST CONCENTRATIONS OF CARCINOGENS DETECTED IN LAGOON SEDIMENTS.

UNDER THE RESIDENTIAL SCENARIO, THE EXCESS LIFETIME CANCER RISK FROM EXPOSURE TO CARCINOGENS RANGES FROM 2 X 10-7 TO 5 X 10-8. UNDER THE RECREATIONAL SCENARIO, THE EXCESS LIFETIME CANCER RISK FROM EXPOSURE TO THESE CARCINOGENS RANGES FROM 6 X 10-10 TO 1 X 10-9.

THE AGENCY CURRENTLY USES A RISK OF ONE IN ONE MILLION (10-6) AS A TARGET ACCEPTABLE LEVEL OF RISK FOR WATER SUPPLY SOURCES. THIS TARGET RISK LEVEL IS NOT EXCEEDED USING WORST CASE GENERATED DATA BY THE WASTE SOURCE IN THE FOREST WASTE LAGOONS.

FOR CHEMICALS NOT CONSIDERED CARCINOGENS, ESTIMATED DAILY INTAKES OF CONTAMINANTS ARE COMPARED TO ACCEPTABLE INTAKES (MAXIMUM DOSE TOLERATED) ESTABLISHED FOR EACH CHEMICAL. ACCEPTABLE INTAKES HAVE BEEN DEVELOPED FOR CHRONIC EXPOSURE (AIC) AND FOR SUBCHRONIC EXPOSURE (AIS). THE AIC IS AN ESTIMATE OF EXPOSURE LEVEL WHICH WOULD NOT BE EXPECTED TO CAUSE ADVERSE EFFECTS WHEN EXPOSURE OCCURS FOR A SIGNIFICANT PORTION OF THE LIFESPAN, ASSUMED TO BE 70 YEARS. AIS IS AN ESTIMATE OF AN EXPOSURE LEVEL WHICH WOULD NOT BE EXPECTED TO CAUSE ADVERSE EFFECTS WHEN EXPOSURE OCCURS DURING A LIMITED TIME INTERVAL (I.E., FOR AN INTERVAL WHICH DOES NOT CONSTITUTE A SIGNIFICANT PORTION OF THE LIFESPAN-10 TO 90 DAYS). THE ACCEPTABLE INTAKES CAN BE EXPRESSED FOR A 70 KG ADULT OR A 10 KG CHILD. THESE SERVE AS MEASURES OF THE POTENTIAL FOR TOXIC EFFECTS AND ARE CONSISTENT WITH U.S. EPA GUIDELINES.

BECAUSE EXPOSURE TO LAGOON WASTES WOULD BE INTERMITTENT UNDER A RECREATIONAL USE OF THE SITE, THE DAILY INTAKES WERE COMPARED TO SUBCHRONIC INTAKES (AIS) UNDER THE RECREATIONAL SCENARIO FOR CHILDREN AND ADULTS.

TABLE 12 PRESENTS A SUMMARY OF THE CHEMICALS WHICH EXCEED THE AIS FOR A 70 KG ADULT FOR EACH LAGOON. TABLE 13 PRESENTS A SUMMARY OF THE CHEMICALS WHICH EXCEED THE AIS FOR A 10 KG CHILD FOR EACH LAGOON.

UNDER A RESIDENTIAL USE OF THE SITE, HUMAN EXPOSURE TO LAGOON WASTES WOULD LIKELY BE MORE CONSISTENT AND CONSTANT THAN EXPOSURE UNDER A RECREATIONAL USE OF THE SITE. THE DAILY INTAKES, THEREFORE, UNDER THE RESIDENTIAL SCENARIO FOR BOTH CHILDREN AND ADULTS, WERE COMPARED TO THE CHRONIC ACCEPTABLE INTAKES (AIC). TABLE 14 PRESENTS A SUMMARY OF CHEMICALS WHICH EXCEED THE AIC FOR A 70 KG ADULT FOR EACH LAGOON. TABLE 15 PRESENTS A SUMMARY OF THE CHEMICALS WHICH EXCEED THE AIC FOR A 10 KG CHILD FOR EACH LAGOON.

THE PUBLIC HEALTH THREAT DUE TO THE NONCARCINOGENS IN THE LAGOONS AT THE FOREST WASTE DISPOSAL SITE CAN THEN BE SUMMARIZED AS FOLLOWS:

- IF THE SITE IS USED FOR RECREATIONAL PURPOSES, PROTECTION OF THE PUBLIC HEALTH AGAINST TOXICITY OF NONCARCINOGENS, AS MEASURED BY COMPARISON OF PROJECTED CONTAMINANT INTAKE TO ACCEPTABLE INTAKES, WOULD BE A CONCERN, ESPECIALLY FOR CHILDREN. LAGOONS NOS. 2, 3, 4, 6, 7, AND 8 APPEAR TO BE OF GREATEST CONCERN DUE TO LEVELS OF METALS FOUND IN THE SEDIMENT.

- IF THE SITE IS USED FOR RESIDENTIAL PURPOSES, PROTECTION OF THE PUBLIC HEALTH AGAINST TOXICITY OF NONCARCINOGENS, AS MEASURED BY COMPARISON OF PROJECTED CONTAMINANT INTAKE TO ACCEPTABLE INTAKE, WOULD BE A CONCERN, ESPECIALLY FOR CHILDREN. LAGOONS NOS. 2, 3, 4, 6, 7, AND 8 ARE OF GREATEST CONCERN DUE TO LEVELS OF METALS FOUND IN THE SEDIMENT.

BASED ON INFORMATION PRESENTED ABOVE, AND CONSIDERATION OF INORGANIC COMPOUND CONCENTRATIONS IN LAGOON SLUDGES, SEDIMENTS AND SOIL, RELATIVE TO VALUES REPORTED IN BACKGROUND SOIL SAMPLES, 0.1 GRAM/DAY OF SOIL IS CONSIDERED AN APPROPRIATE INGESTION RATE TO DETERMINE A LEVEL OF CLEANUP FOR THE FOREST WASTE DISPOSAL SITE LAGOONS TO ADEQUATELY PROTECT PUBLIC HEALTH. CONSIDERING THE 0.1 GRAM/DAY INGESTION RATE, LAGOON NOS. 2, 3, 4, 6, 7, AND 8 HAVE EXPOSED SLUDGES, SEDIMENT, AND SOIL WITH METALS CONCENTRATIONS THAT WOULD EXCEED SUBCHRONIC AND CHRONIC ACCEPTABLE INTAKES IF INGESTED UNDER RECREATIONAL OR RESIDENTIAL SCENARIOS. SLUDGES, SEDIMENT, AND SOIL FROM LAGOON NOS. 2, 3, 4, 6, 7, AND 8 ARE, THEREFORE, THE MATERIALS FROM THE LAGOONS WHICH WILL BE ADDRESSED IN THE SELECTED OPERABLE UNIT REMEDIAL ACTION.

AS MENTIONED IN THE "CURRENT SITE STATUS" SECTION ABOVE, THERE IS A KNOWN RELEASE OF VOLATILE ORGANIC COMPOUNDS FROM THE LAGOON WASTE TO THE GROUNDWATER. THE GROUNDWATER IN THE AREA SERVES AS A DRINKING WATER SOURCE TO SURROUNDING RESIDENTS. RESIDENTS ARE CURRENTLY USING DEEPER SEPARATE AQUIFERS AS THEIR DRINKING WATER SOURCES. THE LAGOON WASTES, NONETHELESS, PRESENT AN ACTUAL AND POTENTIAL FURTHER THREAT TO PUBLIC HEALTH AND THE ENVIRONMENT RELATIVE TO THEIR CONNECTION TO THE GROUNDWATER.

#ENF
ENFORCEMENT ANALYSIS

TWELVE POTENTIALLY RESPONSIBLE PARTIES (PRPS) WERE NOTICED TO UNDERTAKE THE OPERABLE UNIT REMEDY. EIGHT OF THE TWELVE EXPRESSED INTEREST IN NEGOTIATING A SETTLEMENT. THESE EIGHT PARTIES WERE FORWARDED A COPY OF THE PFS ON APRIL 14, 1986. A DRAFT ADMINISTRATIVE ORDER ON CONSENT WAS MAILED TO THE PRPS ON APRIL 23, 1986.

THE INITIAL NEGOTIATIONS MEETING TOOK PLACE APRIL 28, 1986 AT THE U.S. EPA OFFICE IN CHICAGO. A SIXTY DAY NEGOTIATIONS PERIOD ENDED ON JUNE 13, 1986. A SETTLEMENT BETWEEN THE AGENCY AND PRPS WAS NOT REACHED.

#AE
ALTERNATIVES EVALUATED

THE NATIONAL CONTINGENCY PLAN (NCP) STATES THAT OPERABLE UNIT REMEDIAL ACTIONS ARE APPROPRIATE IF SUCH MEASURES ARE COST-EFFECTIVE, AND ARE CONSISTENT WITH THE PERMANENT REMEDY AT THE SITE (40 CFR 300.68 (C) (3)). REMEDIAL ACTIONS, ACCORDING TO THE NCP, MUST PREVENT OR MINIMIZE THE RELEASE OF HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS, SO THAT THEY DO NOT MIGRATE TO CAUSE SUBSTANTIAL DANGER TO PRESENT OR FUTURE PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT (40 CFR 300.68(A)(1)).

SOURCE CONTROL REMEDIAL ACTION OPERABLE UNITS FOR THE LAGOON WASTES WERE

DEVELOPED AND EVALUATED. REMEDIAL ACTIONS TO ADDRESS THE GROUNDWATER CONTAMINATION WERE NOT DEVELOPED AS PART OF THIS OPERABLE UNIT BECAUSE THE NATURE AND EXTENT OF GROUNDWATER CONTAMINATION IS NOT YET FULLY DEFINED (SEE "CURRENT SITE STATUS" SECTION ABOVE). UPON COMPLETION OF RI ACTIVITIES AND DEFINITION OF THE GROUNDWATER CONTAMINATION, AN EVALUATION OF GROUNDWATER REMEDIES WILL BE MADE.

TEN ALTERNATIVES FOR REMEDIATION OF THE LAGOONS SOLIDS WERE ASSEMBLED USING APPROPRIATE REMEDIAL TECHNOLOGIES. FOUR ALTERNATIVES FOR REMEDIATION OF THE LAGOON LIQUIDS WERE ASSEMBLED USING APPROPRIATE TECHNOLOGIES. THESE TWO GROUPS OF ALTERNATIVES WERE EVALUATED SEPARATELY, IN TERMS OF TECHNICAL IMPLEMENTABILITY, PUBLIC HEALTH AND ENVIRONMENTAL PROTECTION, AND COMPATIBILITY WITH THE FINAL REMEDY. A SUMMARY OF THIS EVALUATION IS PRESENTED IN TABLES 16A AND 16B.

THREE ALTERNATIVES FOR REMEDIATION OF LAGOON SOLIDS, AND ONE ALTERNATIVE FOR REMEDIATION OF LAGOON LIQUIDS WERE ADVANCED FOR DETAILED ANALYSIS AND FURTHER SCREENING. THE ONE ADVANCED ALTERNATIVE FOR REMEDIATION OF LAGOON LIQUIDS WAS COMBINED WITH EACH OF THE THREE ADVANCED ALTERNATIVES FOR REMEDIATION OF THE LAGOON SOLIDS.

TREATMENT AND DISCHARGE AT AN OFFSITE RCRA-PERMITTED TREATMENT FACILITY WAS THE ALTERNATIVE FOR REMEDIATION OF THE LAGOON LIQUIDS WHICH WAS ADVANCED. THIS ALTERNATIVE WILL ATTAIN RELEVANT AND APPLICABLE ENVIRONMENTAL STANDARDS. THIS IS THE ONLY ALTERNATIVE WHICH CAN BE IMPLEMENTED QUICKLY AND EASILY. ALL OTHER ALTERNATIVES HAVE INSTITUTIONAL AND/OR PRACTICAL CONCERNS WHICH MAY PROHIBIT OR DELAY TIMELY IMPLEMENTATION OF THE ALTERNATIVE.

TREATMENT AND DISCHARGE OF LIQUIDS AT PUBLICLY OWNED TREATMENT WORKS (POTW) MAY BE IMPOSSIBLE TO IMPLEMENT BECAUSE A POTW WHICH WOULD BE WILLING TO ACCEPT THE WASTE MAY NOT BE AVAILABLE. ONSITE TREATMENT AND SURFACE WATER DISCHARGE WOULD BE DIFFICULT AND IMPRACTICAL TO IMPLEMENT FOR SUCH A SMALL QUANTITY OF WASTE. DIRECT DISCHARGE TO SURFACE WATER MAY BE UNDESIRABLE FOR IMPLEMENTATION BECAUSE APPLICABLE AND RELEVANT DISCHARGE STANDARDS MAY NOT BE ATTAINABLE.

EACH OF THE THREE ASSEMBLED ALTERNATIVES ARE DESCRIBED BELOW.

ALTERNATIVE 1. EXCAVATION, TREATMENT, AND OFFSITE DISPOSAL

ALL CONTAMINATED SLUDGES AND SEDIMENT FROM LAGOON NOS. 2, 3, 4, 6, 7, AND 8 WOULD BE EXCAVATED, TREATED ONSITE (SOLIDIFIED), AND DISPOSED OF OFFSITE AT A RCRA-PERMITTED FACILITY. LAGOON NOS. 1, 5, AND 9 WOULD RECEIVE NO ACTION. AQUEOUS LAGOON WASTES WOULD BE REMOVED, THEN TREATED AND DISPOSED OF OFFSITE AT A RCRA-PERMITTED FACILITY. THE TOTAL DEPTH OF WASTE IN THE LAGOONS IS SHALLOW (MAXIMUM OF 3 FEET), THEREFORE, THE LAGOONS WILL NOT REQUIRE BACKFILLING.

THIS ALTERNATIVE IS AN OFFSITE MEASURE WHICH USES A RCRA FACILITY. THIS ALTERNATIVE ATTAINS APPLICABLE FEDERAL PUBLIC HEALTH STANDARDS.

ALTERNATIVE 2. EXCAVATION, TREATMENT, REPLACEMENT, LOW-PERMEABILITY CAP

ALL CONTAMINATED SLUDGES AND SEDIMENT FROM THE LAGOON NOS. 2, 3, 4, 6. 7, AND 8 WOULD BE EXCAVATED AND TREATED. LAGOONS NOS. 1, 5, AND 9 WOULD RECEIVE NO ACTION. THE TREATMENT WOULD INVOLVE PRECIPITATION AND SOLIDIFICATION BY MIXING APPROPRIATE AMOUNTS OF LIMESTONE ($CACO_3$) OR CALCIUM HYDROXIDE ($CA(OH)_2$), PORTLAND CEMENT, AND FLYASH TO THE CONTAMINATED SOLIDS, AS THEY ARE BEING EXCAVATED. THE LIMING WOULD MAINTAIN ALKALINE CONDITIONS AND SERVE TO KEEP THE METALS IN THE WASTE PRECIPITATED.

THE TREATED SOLIDS WOULD THEN BE REPLACED INTO TWO OF THE EXISTING LAGOONS, WHICH WOULD BE LINED WITH A LAYER OF CRUSHED LIMESTONE. THE REPLACED SOLIDS WOULD BE COVERED WITH A LAYER OF CRUSHED LIMESTONE AND CAPPED. THE CAP WOULD BE CONSTRUCTED OF COMPACTED CLAY AND A SYNTHETIC MEMBRANE TO REDUCE INFILTRATION AND PROMOTE SURFACE RUNOFF. THE TOTAL DEPTH OF WASTE IN THE LAGOONS IS SHALLOW (MAXIMUM OF 3 FEET), THEREFORE, THE EXCAVATED LAGOONS WHICH REMAIN EMPTY WILL NOT REQUIRE BACKFILLING.

THE AQUEOUS LAGOON WASTES WOULD BE REMOVED, THEN TREATED AND DISPOSED OF OFFSITE AT A RCRA-PERMITTED FACILITY.

THIS IS AN ONSITE SOURCE CONTROL ALTERNATIVE WHICH MEETS CERCLA GOALS.

ALTERNATIVE 3. IN-PLACE TREATMENT, NATIVE SOIL COVER

ALL CONTAMINATED SLUDGES AND SEDIMENT FROM THE LAGOON NOS. 2, 3, 4, 6, 7, AND 8 WOULD BE TREATED IN-PLACE. LAGOON NOS. 1, 5, AND 9 WOULD RECEIVE NO ACTION. THE TREATMENT WOULD INVOLVE ADDING POWDERED LIMESTONE (CACO3) OR CALCIUM HYDROXIDE (CA(OH)2), AS NECESSARY, TO ADJUST THE PH OF LAGOON SOLIDS. THE LIMING WOULD MAINTAIN ALKALINE CONDITIONS, AND SERVE TO KEEP THE METALS IN THE WASTE PRECIPITATED.

AFTER LIMING, THE TREATED MATERIALS WOULD BE GRADED AND COVERED WITH A LAYER OF CRUSHED LIMESTONE. A GEOTEXTILE FABRIC WOULD BE PLACED OVER THE LIMESTONE, AND NATIVE SOIL COVER WOULD BE GRADED AND CONTOURED TO PROMOTE SURFACE WATER RUNOFF.

THE AQUEOUS LAGOON WASTES WOULD BE REMOVED, THEN TREATED AND DISPOSED OF OFFSITE AT A RCRA-PERMITTED FACILITY.

THIS IS AN ONSITE SOURCE CONTROL ALTERNATIVE WHICH MEETS CERCLA GOALS.

ALTERNATIVE 4. NO ACTION

IN THIS ALTERNATIVE THERE WOULD BE NO REMEDIATION OF THE SITE LAGOONS. THE ENVIRONMENTAL AND PUBLIC HEALTH RISK POSED BY THE LAGOONS WOULD REMAIN.

THIS IS THE NO ACTION ALTERNATIVE.

IN ACCORDANCE WITH THE NCP, SECTION 300.68(F)(1), TO THE EXTENT POSSIBLE AND APPROPRIATE, AT LEAST ONE REMEDIAL ALTERNATIVE IN EACH OF THE FOLLOWING CATEGORIES WAS DEVELOPED:

(I) ALTERNATIVES FOR TREATMENT OR DISPOSAL AT AN OFFSITE FACILITY (ALTERNATIVE NO. 1);

(II) ALTERNATIVES THAT ATTAIN APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS (ALTERNATIVE NO. 1);

(III) ALTERNATIVES THAT EXCEED APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS (NO ALTERNATIVE WAS DEVELOPED FOR THIS CATEGORY.);

(IV) ALTERNATIVES THAT DO NOT ATTAIN APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS, BUT WILL REDUCE THE LIKELIHOOD OF PRESENT OR FUTURE THREAT FROM THE HAZARDOUS SUBSTANCES AND PROVIDE SIGNIFICANT PROTECTION TO PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT (ALTERNATIVE NOS. 2 AND 3);

(V) NO ACTION ALTERNATIVE (ALTERNATIVE NO. 4).

RCRA IS THE FEDERAL ENVIRONMENTAL LAW WHICH IS APPLICABLE OR RELEVANT AND APPROPRIATE TO THE FOREST WASTE DISPOSAL OPERABLE UNIT REMEDIAL ACTION.

ALTERNATIVE NO. 1 IS AN OFFSITE ALTERNATIVE (I) THAT ATTAINS APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS (II). IT WAS NOT APPROPRIATE TO DEVELOP AN ALTERNATIVE WHICH EXCEEDS FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS. THE DEVELOPED ALTERNATIVES COVER A RANGE OF REMEDIATION OF THE SITE LAGOON WASTES, INCLUDING COMPLETE REMOVAL OF THE APPROPRIATE LAGOON WASTES. REMEDIATION OF THE LAGOON WASTES BEYOND COMPLETE REMOVAL IS INAPPROPRIATE BECAUSE IT WOULD PROVIDE NO FURTHER PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT. ALTERNATIVE NOS. 2 AND 3 FALL INTO CATEGORY IV ABOVE. THE NO ACTION ALTERNATIVE WAS CONSIDERED IN THE FINAL ANALYSIS OF ALTERNATIVES.

#CR
COMMUNITY RELATIONS

THE SUPERFUND ACTIVITIES AT THE FOREST WASTE DISPOSAL SITE HAVE BEEN FOLLOWED CLOSELY BY THE LOCAL COMMUNITY AND PRESS. THE MDNR CURRENTLY HAS THE LEAD ROLE IN COMMUNITY RELATIONS ACTIVITIES AT THE SITE. THE STATE AND THE AGENCY HAVE WORKED TOGETHER TO KEEP COMMUNICATION WITH THE COMMUNITY OPEN AND FREQUENT.

THERE IS AN ACTIVE MAILING LIST OF LOCAL CITIZENS WHO RECEIVE UPDATES ABOUT SITE ACTIVITIES. NEWSLETTERS ARE PERIODICALLY MAILED TO THE CITIZENS, UPDATING THEM ON RECENT SITE ACTIVITIES.

A CITIZENS INFORMATION COMMITTEE (CIC) HAS BEEN FORMED BY THE STATE. THIS IS A GROUP OF LOCAL CITIZENS AND FEDERAL, STATE, COUNTY AND LOCAL OFFICIALS WITH HIGH INTEREST IN SITE ACTIVITIES. THIS GROUP MEETS PERIODICALLY TO RECEIVE INFORMATION ABOUT SITE ACTIVITIES AND EXCHANGE INFORMATION ABOUT COMMUNITY CONCERNS. THE COMMITTEE MEMBERS SERVE AS LIAISONS BETWEEN THE LOCAL CITIZENS, AND MDNR AND U.S. EPA.

COPIES OF THE PHASED FEASIBILITY STUDY (PFS) WERE MADE AVAILABLE TO THE COMMUNITY ON APRIL 14, 1986. THE FOREST TOWNSHIP LIBRARY, IN THE FOREST TOWNSHIP HALL, SERVED AS A REPOSITORY FOR TWO COPIES OF THE STUDY.

THE MDNR ISSUED A PRESS RELEASE IN THE FLINT JOURNAL ON APRIL 15, 1986, WHICH ANNOUNCED THE AVAILABILITY OF THE STUDY AND THE APRIL 14 - MAY 5 PUBLIC COMMENT PERIOD. THE PRESS RELEASE ANNOUNCED A PUBLIC MEETING WHICH WAS HELD IN THE FOREST TOWNSHIP HALL ON THE EVENING OF APRIL 21, 1986. A CIC MEETING WAS HELD THE AFTERNOON OF APRIL 21, 1986, TO PRESENT THE PFS TO THE COMMITTEE MEMBERS. THE CIC MEETING AND THE EVENING PUBLIC MEETING WERE BOTH WELL-ATTENDED. THE COMMUNITY WAS RECEPTIVE TO THE PRESENTATION OF THE PFS AND SUPPORTED THE RECOMMENDATION FOR ACTION ON THE LAGOONS.

SOME CITIZENS EXPRESSED CONCERNS THAT THEY HAD BEEN DEALT WITH UNFAIRLY IN PAST OCCURRENCES AT THE FOREST WASTE DISPOSAL SITE. THE OFFSITE DISPOSAL OF SITE LAGOON WASTES WAS EXPRESSED BY SOME CITIZENS AS THE ONLY ACCEPTABLE OPTION FOR REMEDIAL ACTION ON THE LAGOONS.

THE RESPONSIVENESS SUMMARY TO THE PUBLIC COMMENT IS ATTACHED TO THIS NARRATIVE SUMMARY.

SELECTION PROCESS

THE THREE DEVELOPED ALTERNATIVES, ALONG WITH THE NO ACTION ALTERNATIVE, WERE FURTHER EVALUATED. THE APPROPRIATE COST-EFFECTIVE REMEDIAL MEASURE WAS SELECTED IN ACCORDANCE WITH THE SELECTION PROCESS OUTLINED IN SECTION 300.68 (I)(1) AND (2) OF THE NCP. THIS SELECTION WAS BASED PARTIALLY ON CONSIDERATIONS OF COST, TECHNOLOGY (TECHNICAL IMPLEMENTABILITY), AND RELIABILITY TO PROTECT PUBLIC HEALTH WAS ALSO CONSIDERED IN THE FINAL SELECTION PROCESS. FINALLY, CONSISTENCY WITH A PERMANENT REMEDY FOR THIS OPERABLE UNIT REMEDIAL ACTION WAS CONSIDERED IN ACCORDANCE WITH SECTION 300.68 (C)(1) OF THE NCP.

TABLE 17 SUMMARIZED THE CAPITAL, ANNUAL OPERATIONS AND MAINTENANCE (O&M), AND PRESENT WORTH COSTS FOR EACH OF THE THREE DEVELOPED ALTERNATIVES. THE COSTS REPRESENT AN ORDER OF MAGNITUDE ESTIMATE AND HAVE AN ESTIMATED ACCURACY OF +50 AND -30 PERCENT. THE ESTIMATED PRESENT WORTH OF ALL ALTERNATIVES WAS BASED ON A 30-YEAR PERIOD AND 10-PERCENT INTEREST RATE. FOR ALTERNATIVE NO. 1, A RCRA PERMITTED DISPOSAL FACILITY LOCATED APPROXIMATELY 100 MILES FROM THE FOREST WASTE SITE, WAYNE DISPOSAL, WAS USED TO PROJECT COSTS FOR OFF-SITE DISPOSAL OF SLUDGES AND SEDIMENTS. IF THIS FACILITY IS NOT IN COMPLIANCE WITH THE U.S. EPA OFF-SITE POLICY WHEN THE FOREST WASTE REMEDIAL DESIGN IS COMPLETED, COSTS FOR ALTERNATIVE 1 WILL LIKELY INCREASE FOR ONE OF TWO REASONS. FIRST, THE WASTES COULD BE TREATED AND THEN STORED ON SITE UNTIL THE FACILITY CAME INTO COMPLIANCE. THIS COULD INCREASE THE COST OF THE ALTERNATIVE BECAUSE OF INCREASED WASTE HANDLING BY AN ESTIMATED TWO PERCENT. ALTERNATIVELY, A FACILITY WHICH IS FARTHER AWAY FROM THE SITE THAN WAYNE DISPOSAL IS, BUT WHICH IS IN COMPLIANCE WITH THE OFF-SITE POLICY, COULD BE USED FOR WASTE DISPOSAL. THIS COULD POTENTIALLY DOUBLE THE COST OF ALTERNATIVE NO. 1 BECAUSE OF THE GREATER TRANSPORTATION DISTANCE.

DURING THE EARLY STAGES OF THE ALTERNATIVES REVIEW, THE NO ACTION ALTERNATIVE WAS ELIMINATED FROM FURTHER CONSIDERATION. THIS DECISION WAS BASED UPON AN EVALUATION OF THE PUBLIC HEALTH RISKS IMPOSED BY THE MATERIALS IN THE LAGOONS AT THE FOREST WASTE DISPOSAL SITE. THESE MATERIALS HAVE BEEN SHOWN TO POSE AN UNACCEPTABLE PUBLIC HEALTH RISK, THUS WARRANT IMPLEMENTATION OF A REMEDIAL ACTION. THE NO ACTION

ALTERNATIVE, THEREFORE, IS NOT APPROPRIATE.

THE REMAINING THREE ALTERNATIVES WERE COMPARED IN TERMS OF THE FOLLOWING FIVE SCREENING CRITERIA: ABILITY TO PROTECT PUBLIC HEALTH, TECHNICAL IMPLEMENTABILITY, RELIABILITY, RELATIVE ECONOMIC COSTS, AND CONSISTENCY WITH A PERMANENT REMEDY. TABLE 18 SUMMARIZES THE EVALUATION OF THE DEVELOPED ALTERNATIVES.

THE THREE ALTERNATIVES, RANKED IN DESCENDING ORDER OF ABILITY TO PROTECT PUBLIC HEALTH, ARE ALTERNATIVE NO. 1, NO. 2, AND NO. 3. ALTERNATIVE NO. 1 IS AN OFFSITE ALTERNATIVE, THEREFORE, REMOVES THE WASTE FROM THE SITE AND SURROUNDING AREA. THIS ELIMINATES THE RISK ASSOCIATED WITH DIRECT CONTACT OF CONTAMINATED MATERIALS TO THE SURROUNDING COMMUNITY AND ELIMINATES THE POTENTIAL FOR CONTAMINANTS TO FURTHER LEACH TO THE GROUNDWATER AT THE SITE. ALTERNATIVES NO. 2 AND NO. 3 REDUCE, BUT DO NOT ELIMINATE, THE PUBLIC HEALTH RISK ASSOCIATED WITH DIRECT CONTACT OF CONTAMINATED MATERIALS TO THE SURROUNDING COMMUNITY. ALTERNATIVE NO. 2 REDUCES, BUT DOES NOT ELIMINATE, THE POTENTIAL FOR CONTAMINANTS TO FURTHER LEACH TO THE GROUNDWATER AT THE SITE. ALTERNATIVE NO. 3 SOMEWHAT REDUCES THE POTENTIAL FOR CONTAMINANTS TO FURTHER LEACH TO THE GROUNDWATER AT THE SITE.

THE THREE ALTERNATIVES, RANKED IN DESCENDING ORDER OF IMPLEMENTABILITY, ARE ALTERNATIVE NO. 1, NO. 3, AND NO. 2.

ALTERNATIVE NO. 1 CAN BE IMPLEMENTED VERY QUICKLY AND EASILY WITH CONVENTIONAL CONSTRUCTION METHODS. CONSTRUCTION TIME IS ABOUT ONE MONTH AFTER COMPLETION OF DESIGN AND ADMINISTRATIVE REQUIREMENTS. RESULTS ARE REALIZED AS CONTAMINANTS ARE REMOVED FROM THE SITE. DESIGN AND ADMINISTRATIVE REQUIREMENTS MAY REQUIRE UP TO 3 TO 12 MONTHS.

TREATMENT AND COVERING OF CONTAMINATED LAGOON SEDIMENT IN ALTERNATIVE NO. 3 CAN BE IMPLEMENTED QUICKLY AND EASILY WITH CONVENTIONAL CONSTRUCTION METHODS. CONSTRUCTION TIME AFTER DESIGN AND ADMINISTRATIVE REQUIREMENTS IS ABOUT 1-TO 2 MONTHS. DESIGN AND ADMINISTRATIVE ACTIVITIES MAY REQUIRE UP TO 12 MONTHS.

TREATMENT, EXCAVATION, AND REPLACEMENT OF LAGOON SEDIMENTS IN ALTERNATIVE NO. 2 CAN BE IMPLEMENTED EASILY AND QUICKLY WITH CONVENTIONAL CONSTRUCTION AND AGRICULTURAL METHODS. INSTALLATION OF THE LOW-PERMEABILITY CAP REQUIRES STRICT QUALITY CONTROL AND WOULD BE SOMEWHAT DIFFICULT TO IMPLEMENT. DESIGN AND ADMINISTRATIVE ACTIVITIES MAY REQUIRE UP TO 12 MONTHS. ACTUAL CONSTRUCTION TIME IS ESTIMATED TO BE APPROXIMATELY 3 MONTHS.

AS DESCRIBED BELOW IN THE "CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS" SECTION, MICHIGAN HAZARDOUS WASTE MANAGEMENT ACT 64 IMPOSES PERMITTING REQUIREMENTS WHEN TREATING, STORING, AND/OR DISPOSING OF HAZARDOUS WASTES AS DEFINED BY ACT 64. THE LAGOON SEDIMENTS FROM LAGOON NO. 4 ARE THE ONLY WASTES BEING ADDRESSED IN THIS OPERABLE UNIT THAT ARE DESCRIBED AS HAZARDOUS UNDER ACT 64.

THE NCP STATES THAT STATE PERMITS ARE NOT REQUIRED FOR FUND-FINANCED REMEDIAL ACTIONS (40 CFR SECTION 300.68 (A)(3)). THE ADMINISTRATIVE PROTOCOLS ASSOCIATED WITH GAINING ACT 64 PERMITS FOR TREATING, STORING, AND/OR DISPOSING OF LAGOON NO. 4 SEDIMENTS ARE, THEREFORE, NOT CONCERNS ASSOCIATED WITH ANY OF THE THREE DEVELOPED ALTERNATIVES. IT IS, HOWEVER, THE INTENTION OF THE CERCLA PROGRAM TO COMPLY, AS APPROPRIATE, WITH ALL THE TECHNICAL REQUIREMENTS OF ANY STATE PERMITS WHEN IMPLEMENTING FUND-FINANCED REMEDIAL ACTIONS. IF THE TECHNICAL REQUIREMENTS OF STATE PERMITS ARE SUBSTANTIALLY MORE STRINGENT THAN FEDERAL REQUIREMENTS AND WOULD INVOLVE SUBSTANTIAL ADDITIONAL COSTS, COMPLIANCE WOULD LIKELY NOT BE APPROPRIATE. THE TECHNICAL REQUIREMENTS OF APPLICABLE AND/OR RELEVANT MICHIGAN ENVIRONMENTAL LAWS ARE NOT MORE STRINGENT THAN APPLICABLE AND/OR RELEVANT FEDERAL REQUIREMENTS FOR THE FOREST WASTE OPERABLE UNIT. THESE TECHNICAL REQUIREMENTS OF STATE PERMITTING, THEREFORE, MERIT CONSIDERATION IN AN EVALUATION OF THE

IMPLEMENTABILITY OF ALTERNATIVES.

IN ALTERNATIVE NO. 1, THE WASTES FROM LAGOON NO. 4 COULD BE HANDLED AS DESCRIBED ONLY AFTER MEETING THE TECHNICAL REQUIREMENTS OF AN ACT 64 TREATMENT FACILITY PERMIT. THE SOLIDIFICATION IN THIS ALTERNATIVE IS CONSIDERED TO BE A FORM OF TREATMENT UNDER ACT 64. THE ACT 64 REQUIREMENT EXPECTED TO BE OF CONCERN INVOLVES AN EVALUATION OF THE POTENTIAL AIR EMISSIONS PROBLEM ASSOCIATED WITH THE PROPOSED TREATMENT AND AN EVALUATION OF PROTECTION MEASURES PROPOSED TO DEAL WITH THIS POTENTIAL PROBLEM.

IN ALTERNATIVE NO. 3, LAGOON NO. 4 SEDIMENTS ARE NOT REMOVED DURING TREATMENT OR DISPOSAL, THEREFORE, SINCE THESE WASTES WERE DISPOSED OF PRIOR TO 1980, ACT 64 REGULATIONS AND ASSOCIATED PERMITTING REQUIREMENTS ARE NOT APPLICABLE. THESE WASTES WOULD, HOWEVER, NEED TO BE DISPOSED OF IN ACCORDANCE WITH THE TECHNICAL REQUIREMENTS OF THE MICHIGAN SOLID WASTE MANAGEMENT ACT (SWMA). THIS WASTE WOULD BE CONSIDERED NON-INERT MATERIAL UNDER THE SWMA, THEREFORE, REQUIRE DISPOSAL IN A TYPE II LANDFILL. THIS WOULD REQUIRE THE INSTALLATION OF A SINGLE LINER AND A LEACHATE COLLECTION SYSTEM. ALTERNATIVE NO. 3 DOES NOT MEET THE TECHNICAL REQUIREMENTS OF THE SWMA, AND THIS WOULD LIKELY DELAY AND/OR PREVENT SMOOTH IMPLEMENTATION OF THIS REMEDY.

IN ALTERNATIVE NO. 2, THE TREATMENT OF LAGOON NO. 4 SEDIMENTS WOULD ALSO REQUIRE COMPLIANCE WITH THE TECHNICAL REQUIREMENTS OF AN ACT 64 TREATMENT FACILITY PERMIT. FURTHERMORE, AN EVALUATION OF THE WASTE AFTER TREATMENT WOULD ALSO BE NEEDED BEFORE THE WASTE WAS LAND DISPOSED IN LAGOON NOS. 2 AND 4. IF THE WASTE REMAINED CHARACTERIZED AS HAZARDOUS, THE TECHNICAL REQUIREMENTS OF AN ACT 64 DISPOSAL FACILITY PERMIT WOULD NEED TO BE MET. THIS WOULD INVOLVE THE INSTALLATION OF A DOUBLE LINER AND LEACHATE COLLECTION SYSTEM. IF THE WASTE AFTER TREATMENT WAS NO LONGER CHARACTERIZED AS HAZARDOUS, THE TECHNICAL REQUIREMENTS OF THE SWMA FOR LAND DISPOSAL OF WASTE WOULD NEED TO BE MET. AS IN ALTERNATIVE NO. 3, THIS WOULD REQUIRE INSTALLATION OF A SINGLE LINER AND A LEACHATE COLLECTION SYSTEM. ALTERNATIVE NO. 2 DOES NOT MEET THE TECHNICAL REQUIREMENTS OF ACT 64 AND/OR THE SWMA, AND THIS WOULD LIKELY DELAY AND/OR PREVENT SMOOTH IMPLEMENTATION OF THIS REMEDY.

IT ALSO MERITS CONSIDERATION IN AN EVALUATION OF IMPLEMENTABILITY OF ALTERNATIVES, THE STATE AND COMMUNITY SUPPORT OF EACH OF THE ALTERNATIVES. THE STATE OF MICHIGAN HAS INDICATED STRONG SUPPORT FOR THE SELECTION OF ALTERNATIVE NO. 1. THE STATE HAS INDICATED THAT ALTERNATIVE NOS. 2 AND 3 DO NOT PROVIDE ADEQUATE PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT, AND THEREFORE, ARE NOT COST-EFFECTIVE.

THE COMMUNITY, LIKEWISE, HAS INDICATED STRONG SUPPORT FOR SELECTION OF ALTERNATIVE NO. 1 (SEE "COMMUNITY RELATIONS" SECTION ABOVE AND THE RESPONSIVENESS SUMMARY). THE COMMUNITY HAS INDICATED THAT, IN THEIR OPINION, ONSITE DISPOSAL OF THE WASTE DOES NOT PROVIDE ADEQUATE PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT.

THE THREE ALTERNATIVES, RANKED IN DESCENDING ORDER OF RELIABILITY, ARE ALTERNATIVE NO. 1, NO. 2, AND NO. 3. ALTERNATIVE NO. 1 INCORPORATES THE USE OF OPERATIONALLY ROUTINE WASTE HANDLING TECHNOLOGIES. THE SOLIDIFICATION TREATMENT HAS PROVEN PERFORMANCE FOR STABILIZING WASTE. ULTIMATE DISPOSAL OF SOLIDIFIED WASTES AT A RCRA LANDFILL IS CONSIDERED RELIABLE. TREATMENT AND DISPOSAL OF LIQUID WASTES AT A RCRA TREATMENT FACILITY IS CONSIDERED RELIABLE.

THE PRECIPITATION TREATMENT IN ALTERNATIVES NOS. 2 AND 3 HAS PROVEN PERFORMANCE FOR ADJUSTING PH AND ELIMINATING FREE LIQUIDS, BUT THE EFFECTIVENESS OF PH ADJUSTMENT FOR REDUCING METALS MOBILITY IN FOREST WASTE LAGOON WASTES IS UNDEMONSTRATED AND REQUIRES BENCH-SCALE TESTING. THE SUCCESS OF THIS PROPOSED TREATMENT IS, THEREFORE, UNKNOWN. FURTHERMORE, THE PROPOSED TREATMENT WOULD DO LITTLE TO IMPAIR THE LEACHABILITY OF ORGANIC COMPOUNDS TO THE GROUNDWATER.

IN ALTERNATIVES NO. 2 AND NO. 3, RESPECTIVELY, THE LOW-PERMEABILITY CAP AND NATIVE SOIL COVER WOULD PROVIDE RELIABLE PROTECTION AGAINST DIRECT CONTACT THREAT. THE LOW-PERMEABILITY CAP WOULD EFFECTIVELY SERVE TO PREVENT WATER FROM PERCOLATING TO THE WASTES. THE NATIVE SOIL COVER WOULD DO LITTLE TO PREVENT WATER FROM PERCOLATING TO THE WASTES.

THE ALTERNATIVES, IN ASCENDING ORDER OF CAPITAL COSTS AND PRESENT WORTH ARE ALTERNATIVES NO. 3, NO. 2, AND NO. 1 (SEE TABLE 17). ALTERNATIVE NO. 1 HAS NO ASSOCIATED OPERATIONS AND MAINTENANCE (O&M) COSTS. ALTERNATIVE NO. 3 HAS ESTIMATED ANNUAL O&M COSTS OF $500. ALTERNATIVE NO. 2 HAS ESTIMATED ANNUAL O&M COSTS OF $1,000.

ALL THREE ALTERNATIVES SERVE TO REDUCE THE THREAT OF SITE HAZARDOUS SUBSTANCES TO PRESENT OR FUTURE PUBLIC HEALTH TO VARYING DEGREES. ALTERNATIVE NO. 1 IS CLEARLY THE MOST CONSISTENT OF THE THREE ALTERNATIVES WITH A PERMANENT REMEDY. ALTERNATIVE NO. 1 MORE EFFECTIVELY REDUCES THE PUBLIC HEALTH-THREAT THAN ALTERNATIVE NOS. 2 OR 3. IN ALTERNATIVE NOS. 2 AND 3, A POTENTIAL THREAT TO THE GROUNDWATER REMAINS. IN ALTERNATIVE NO. 1, THE WASTE IS REMOVED FROM THE SITE, THEREFORE, THE POTENTIAL THREAT TO THE GROUNDWATER FROM THE WASTE IS ELIMINATED.

ALTERNATIVE NOS. 2 AND 3 ALSO MAY REQUIRE ABANDONMENT AND DESTRUCTION OF REMEDIAL ACTION STRUCTURES IN THE PERMANENT REMEDY. IF FURTHER ONSITE TREATMENT OR OFFSITE TREATMENT/DISPOSAL OPTIONS ARE CHOSEN IN THE PERMANENT REMEDY, THE LINED LAGOONS MAY BE ABANDONED AND THE MULTI-LAYER, LOW-PERMEABILITY CAP MAY BE DESTROYED FROM ALTERNATIVE NO. 2. LIKEWISE, IMPLEMENTATION OF THESE TYPES OF PERMANENT REMEDIES WOULD REQUIRE DESTRUCTION OF THE NATIVE SOIL COVER IN ALTERNATIVE NO. 3.

ALTERNATIVE NO. 1, THEREFORE, IS THE ALTERNATIVE MOST CONSISTENT WITH A PERMANENT REMEDY.

#RA
RECOMMENDED ALTERNATIVE

THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN (NCP) (40 CFR PART 300.68(I)(1)) STATES THAT THE APPROPRIATE EXTENT OF REMEDY SHALL BE DETERMINED BY THE LEAD AGENCY'S SELECTION OF A COST-EFFECTIVE REMEDIAL ALTERNATIVE THAT EFFECTIVELY MITIGATES AND MINIMIZES THREATS TO AND PROVIDES ADEQUATE PROTECTION OF PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT. THE NCP ALSO STATES THAT THE SELECTED REMEDY SHOULD ATTAIN OR EXCEED APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS THAT HAVE BEEN IDENTIFIED FOR THE SPECIFIC SITE. BASED ON THE CONSIDERATIONS OUTLINED IN THE NCP AND PRESENTED IN THE "SELECTION PROCESS" SECTION ABOVE, ALTERNATIVE NO. 1 WAS SELECTED AS THE APPROPRIATE COST-EFFECTIVE REMEDIAL ALTERNATIVE.

ALTERNATIVE NO. 1 IS SUPERIOR TO ALTERNATIVE NOS. 2 AND 3 IN TERMS OF ABILITY TO PROTECT PUBLIC HEALTH, IMPLEMENTABILITY AND RELIABILITY. ALTERNATIVE NO. 1 IS ALSO CLEARLY THE MOST CONSISTENT WITH A PERMANENT REMEDY AT THE SITE OF THE THREE DEVELOPED ALTERNATIVES. FINALLY, ALTERNATIVE NO. 1 ATTAINS APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS (RCRA). BASED ON THESE STRENGTHS, ALTERNATIVE NO. 1 WAS SELECTED AS THE APPROPRIATE COST-EFFECTIVE ALTERNATIVE.

#OEL
CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

THERE ARE TWO ENVIRONMENTAL LAWS WHICH RAISE IMPORTANT ISSUES CONCERNING ALTERNATIVE NO. 1. THESE LAWS ARE THE FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) AND THE MICHIGAN HAZARDOUS WASTE MANAGEMENT ACT (ACT 64 OF 1979).

THE NCP (40 CFR 300.68 (I) (1)) STATES THAT A SELECTED REMEDIAL ACTION ALTERNATIVE SHOULD ATTAIN OR EXCEED APPLICABLE OR RELEVANT FEDERAL PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENTS. THE NCP (40 CFR 300.68 (I) (6) (1)) STATES THAT STATE STANDARDS WILL BE CONSIDERED IN DEVELOPING REMEDIAL ALTERNATIVES, BUT THESE STANDARDS NEED NOT BE USED IF THE RATIONALE FOR NOT USING SUCH STANDARDS IS PRESENTED.

IT IS U.S. EPA POLICY THAT CERCLA REMEDIAL ACTIONS COMPLY WITH RELEVANT AND APPLICABLE ENVIRONMENTAL AND PUBLIC HEALTH STANDARDS AND REQUIREMENTS. "APPLICABLE" STANDARDS ARE DEFINED AS THOSE STANDARDS THAT WOULD BE LEGALLY APPLICABLE IF ACTIONS WERE NOT UNDERTAKEN PURSUANT TO CERCLA. "RELEVANT" STANDARDS ARE THOSE ENCOUNTERED AT A CERCLA SITE ALTHOUGH THEY WOULD NOT BE LEGALLY APPLICABLE.

THE FOLLOWING IS A DISCUSSION OF THE FEDERAL RCRA REGULATIONS IN REFERENCE TO THE FOREST WASTE OPERABLE UNIT.

THE U.S. EPA CONSIDERS ALL WASTES FROM A CERCLA SITE TO BE A HAZARDOUS WASTE, AS DEFINED IN THE RCRA REGULATIONS 40 CFR PART 261 "IDENTIFICATION AND LISTING OF HAZARDOUS WASTES", UNLESS PROVEN OTHERWISE OR UNLESS THE WASTE IS REGULATED BY ANOTHER STATUTE SUCH AS THE TOXIC SUBSTANCES CONTROL ACT. THE FOREST WASTE DISPOSAL LAGOON WASTES ARE REGULATED BY RCRA. TWO SUBPARTS OF PART 261, SUBPART C - CHARACTERISTICS OF HAZARDOUS WASTE" AND SUBPART D - "LISTS OF HAZARDOUS WASTE" RESPECTIVELY DEFINE THE TWO GROUPS OF RCRA HAZARDOUS WASTES: CHARACTERISTIC HAZARDOUS WASTE AND LISTED HAZARDOUS WASTE. IN ORDER TO DETERMINE A CERCLA WASTE IS NOT A CHARACTERISTIC OR LISTED HAZARDOUS WASTE, IT MUST BE DEMONSTRATED AS EXCLUDED IN ACCORDANCE WITH RCRA REGULATIONS 40 CFR PART 260.22 - "PETITIONS TO AMEND PART 261 TO EXCLUDE A WASTE AT A PARTICULAR FACILITY". IF A CERCLA SITE IS KNOWN OR SUSPECTED TO HAVE ACCEPTED A LISTED HAZARDOUS WASTE, THEN THE EFFORT TO EXCLUDE THE CERCLA WASTE AS HAZARDOUS IS GENERALLY MORE INTENSIVE THAN IF THERE WERE NO EVIDENCE WHICH WOULD INDICATE SPECIFIC LISTED WASTES WERE AT THE CERCLA SITE. LISTED HAZARDOUS WASTES ARE SUSPECTED OF, ALTHOUGH NOT SPECIFICALLY KNOWN TO HAVE BEEN, DISPOSED OF IN THE FOREST WASTE DISPOSAL LAGOONS (I.E.,

ELECTROPLATING WASTE AND SPENT SULFURIC ACID). SINCE A REPRESENTATIVE CHARACTERIZATION OF THE LAGOON WASTES HAS NOT BEEN PERFORMED, THE WASTES IN LAGOON NOS. 2, 3, 4, 5, 7, AND 8 WOULD ALL BE CONSIDERED RCRA HAZARDOUS WASTES. RCRA IS THEN RELEVANT AND/OR APPLICABLE TO ALTERNATIVE NO. 1 BECAUSE IT INCLUDES HANDLING AND DISPOSAL OF RCRA HAZARDOUS WASTE.

ALTERNATIVE NO. 1 HAS RCRA ISSUES RELATIVE TO THE ASSOCIATED FREE LIQUIDS LEFT WITH THE WASTE SOLIDS, AFTER THE BULK OF THE LIQUIDS HAVE BEEN SEPARATED FROM THE SOLIDS. THE HAZARDOUS AND SOLID WASTE AMENDMENTS (HSWA) OF 1984 PROHIBIT THE PLACEMENT OF BULK OR NONCONTAINERIZED LIQUID HAZARDOUS WASTE, OR HAZARDOUS WASTE CONTAINING FREE LIQUIDS, IN A LANDFILL, WHETHER OR NOT SORBENTS HAVE BEEN ADDED. NO ASSOCIATED FREE LIQUIDS, THEREFORE, CAN BE LEFT WITH SOLID WASTE BEFORE LANDFILLING. THE WASTE, FURTHERMORE, MUST BE TREATED BEYOND THE ADDITION OF SORBENTS SO THAT IT IS CHEMICALLY OR PHYSICALLY STABILIZED.

THE SOLIDIFICATION TREATMENT PROPOSED IN THIS ALTERNATIVE INCLUDES MIXING APPROPRIATE AMOUNTS OF SOLIDIFYING AGENTS SUCH AS FLY ASH AND PORTLAND CEMENT TO THE LAGOON SEDIMENTS AS THEY ARE BEING EXCAVATED. IT IS EXPECTED THAT THIS TREATMENT WILL EFFECTIVELY ELIMINATE THE ASSOCIATED FREE LIQUIDS, THEREFORE, PROPERLY SOLIDIFY THE WASTE. BENCH SCALE TESTING WILL BE REQUIRED TO DETERMINE THE APPROPRIATE COMBINATION AND QUANTITY OF SOLIDIFICATION ADDITIVES TO EFFECTIVELY TREAT THE LAGOON SEDIMENTS.

IN ORDER TO DEMONSTRATE THAT THE LAGOON SEDIMENTS CONTAIN NO ASSOCIATED FREE LIQUIDS, THE PAINT FILTER TEST, AS REFERRED TO IN RCRA REGULATIONS, 40 CFR SECTION 264.314, WILL BE PERFORMED. PASSAGE OF THIS TEST WILL BE NECESSARY BEFORE THE LAGOON SEDIMENTS CAN BE PLACE IN AN OFFSITE LANDFILL.

IT IS EXPECTED THAT THE PROPOSED TREATMENT WILL SUFFICIENTLY CHEMICALLY/PHYSICALLY STABILIZE THE WASTE. THIS DETERMINATION WILL BE MADE AT THE TIME OF DISPOSAL BY THE LANDFILL OWNER/OPERATION AND THE RCRA PERMITTER. IF THERE IS SOME QUESTION AS TO THE WASTE BEING PROPERLY STABILIZED, A STRENGTH TEST, CURRENTLY BEING REVIEWED BY U.S. EPA HEADQUARTERS AS PART OF THE HAZARDOUS WASTE GUIDANCE, MAY BE PERFORMED. THE STRENGTH TEST UNDER REVIEW IS AN AMERICAN SOCIETY OF TESTING MATERIALS UNCONFINED COMPRESSIVE STRENGTH TEST WHICH REQUIRES WITHHOLDING 50 POUNDS PER SQUARE INCH (PSI) OF PRESSURE. MATERIAL WHICH PASSES THIS TEST IS THOUGHT TO BE PROPERLY STABILIZED. PASSAGE OF THIS TEST IS NOT EXPECTED TO BE NECESSARY BECAUSE AN UNDERSTANDING OF THE TREATMENT OUTLINED IN THIS ALTERNATIVE SHOULD CONVINCE THE LANDFILL OWNER/OPERATOR AND RCRA PERMITTER THAT THE WASTE WILL BE PROPERLY STABILIZED.

IN THE FUTURE, RCRA MAY REQUIRE THE PROPOSED TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TLCP), AS DESCRIBED IN JANUARY 14, 1985, FEDERAL REGISTER 40 CFR PART 260 FOR ALL RCRA LAND-DISPOSED WASTE. THIS LEACHING TEST WILL INDICATE IF THE WASTE HAS BEEN PROPERLY STABILIZED IN TERMS OF LEACHABILITY OF CERTAIN TARGET CONTAMINANTS. THIS TEST MAY BE REQUIRED BY RCRA PRIOR TO LAND DISPOSAL OF THE WASTES IN REMEDY. IF PASSAGE OF THE PROPOSED TCLP IS NECESSARY AT THE TIME OF CONSTRUCTION ACTIVITIES, IT WILL BE NECESSARY TO DO A BENCH-SCALE STUDY OF THE SOLIDIFIED WASTE. IT IS EXPECTED THAT THE TREATED WASTE IN THIS ALTERNATIVE WILL PASS THE TCLP.

RCRA STANDARDS ARE APPLICABLE AND RELEVANT TO ALTERNATIVE NO. 1. ALL RCRA TECHNICAL STANDARDS WOULD BE MET IN THIS ALTERNATIVE, AND THIS ALTERNATIVE WOULD BE IN FULL COMPLIANCE WITH RCRA.

MDNR IS SEEKING FINAL AUTHORIZATION BY U.S. EPA TO ADMINISTER A STATE HAZARDOUS WASTE MANAGEMENT PROGRAM CONSIDERED EQUIVALENT TO THE FEDERAL RCRA PROGRAM. RULE CHANGES TO MICHIGAN ACT 64 HAVE BEEN MADE TO OBTAIN FINAL AUTHORIZATION FROM U.S. EPA. MICHIGAN'S RCRA EQUIVALENT HAZARDOUS WASTE MANAGEMENT PROGRAM REGULATES THE GENERATION, TRANSPORT, STORAGE, TREATMENT, AND DISPOSAL OF HAZARDOUS WASTE. THE FOLLOWING IS A DISCUSSION OF THE APPLICABILITY OF ACT 64 TO THE FOREST WASTE DISPOSAL OPERABLE UNIT.

CURRENTLY, A DETERMINATION OF WHETHER OR NOT ACT 64 "LISTED HAZARDOUS WASTES" WERE DISPOSED OF IN THE LAGOONS CANNOT BE MADE, SINCE SPECIFIC INDUSTRIAL SOURCES OF SUCH WASTES ARE NOT KNOWN. THEREFORE, WHETHER OR NOT A LAGOON WASTE IS CONSIDERED "HAZARDOUS" UNDER MICHIGAN ACT 64, DEPENDS ON WHETHER OR NOT THE WASTE HAS HAZARDOUS CHARACTERISTICS AS DEFINED IN ACT 64. U.S. EPA LAGOON SLUDGE SAMPLING DATA COLLECTED IN 1983 ARE THE ONLY DATA CURRENTLY AVAILABLE TO MAKE THAT DETERMINATION. EP TOXICITY TESTING RESULTS FROM THE 1983 SAMPLING INDICATED THAT ONLY THE LEAD VALUE IN A SAMPLE FROM LAGOON NO. 4 EXCEEDED ITS EP TOXICITY LIMIT. BASED ON THIS DATUM, AND ASSUMING THE SLUDGES FROM THE LAGOONS ARE NOT CORROSIVE, REACTIVE, OR IGNITABLE, MICHIGAN COULD CONSIDER ONLY LAGOON NO. 4 SLUDGES A "HAZARDOUS" WASTE REGULATED UNDER ACT 64.

INSTITUTIONAL PERMITTING REQUIREMENTS ARE PART OF ACT 64 REQUIREMENTS. SECTION 300.68(A)(3) OF THE NCP STATES THAT STATE ENVIRONMENTAL PERMITS ARE NOT REQUIRED FOR FUND-FINANCED CERCLA REMEDIAL ACTIONS. IT IS, HOWEVER, THE INTENTION OF THE CERCLA PROGRAM TO COMPLY, AS APPROPRIATE, WITH ALL TECHNICAL REQUIREMENTS OF STATE PERMITS WHEN IMPLEMENTING FUND-FINANCED REMEDIAL ACTIONS (SEE "SELECTION PROCESS" SECTION ABOVE, P.12) THE TECHNICAL REQUIREMENTS OF APPLICABLE ACT 64 PERMITS WILL, THEREFORE, BE SATISFIED IN IMPLEMENTING ALTERNATIVE NO. 1.

THE WASTE FROM ALL LAGOONS, EXCEPT NO. 4, COULD BE HANDLED AS DESCRIBED IN ALTERNATIVE NO. 1, WITHOUT THE NEED FOR AN ONSITE TREATMENT FACILITY PERMIT. HOWEVER, LAGOON NO. 4 WOULD REQUIRE SATISFACTION OF THESE TECHNICAL PERMITTING REQUIREMENTS FOR THE SITE, SINCE IT CONTAINS A HAZARDOUS WASTE, AND SOLIDIFICATION IS CONSIDERED TO BE A FORM OF TREATMENT UNDER ACT 64. THESE TECHNICAL REQUIREMENTS SHOULD BE RELATIVELY EASILY SATISFIED. THEY WOULD INCLUDE EVALUATION OF THE POTENTIAL AIR EMISSIONS PROBLEM ASSOCIATED WITH THE PROPOSED TREATMENT AND AN EVALUATION OF PROTECTIVE MEASURES PROPOSED TO DEAL WITH THIS POTENTIAL PROBLEM.

ACT 64 STANDARDS ARE APPLICABLE AND RELEVANT TO ALTERNATIVE NO. 1. ALL ACT 64 TECHNICAL STANDARDS WOULD BE MET, AND THIS ALTERNATIVE WOULD BE IN FULL COMPLIANCE WITH ACT 64. OTHER ENVIRONMENTAL LAWS APPLICABLE TO ALTERNATIVE NO. 1 ARE SUMMARIZED IN TABLE 19.

#OM
OPERATION AND MAINTENANCE (O&M)

THE SELECTED REMEDY HAS NO ASSOCIATED OPERATION AND MAINTENANCE COSTS.

STATE AGREEMENTS

SECTION 104(C)(3) OF CERCLA SETS FORTH THE STATE FINANCIAL RESPONSIBILITIES IN REMEDIAL ACTIONS PROVIDED UNDER CERCLA. THE STATE FINANCIAL RESPONSIBILITIES IN THE PROPOSED REMEDIAL ACTION WOULD INCLUDE PAYMENT OR ASSURANCE OF PAYMENT OF 10 PERCENT OF THE COSTS OF REMEDIAL ACTION.

THE DIRECTOR OF THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES HAS SENT THE REGION V REGIONAL ADMINISTRATOR A LETTER ACKNOWLEDGING THE STATE FINANCIAL OBLIGATIONS IN THIS REMEDIAL ACTION.

#TMA
TABLES, MEMORANDA, ATTACHMENTS

#RS

COMMUNITY RELATIONS RESPONSIVENESS SUMMARY
FOREST WASTE DISPOSAL SITE
OTISVILLE, MICHIGAN

INTRODUCTION

THE U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA) HAS BEEN, AND CONTINUES TO, GATHER ENVIRONMENTAL INFORMATION ABOUT THE FOREST WASTE DISPOSAL SITE IN OTISVILLE, MICHIGAN AS PART OF A REMEDIAL INVESTIGATION (RI). UPON COMPLETION OF THE RI, A FEASIBILITY STUDY (FS) WILL BE CONDUCTED TO EVALUATE AND RECOMMEND REMEDIAL MEASURE(S) FOR THE ENTIRE SITE. THE U.S. EPA HAS CONDUCTED A PHASED FEASIBILITY STUDY (PFS), USING INFORMATION GATHERED ON THE LAGOON LIQUIDS, SLUDGES, AND ASSOCIATED SEDIMENT AND SOIL, TO EVALUATE OPERABLE UNIT REMEDIAL RESPONSE ACTIONS AND RECOMMEND A COURSE OF ACTION FOR THE LAGOON WASTES.

AS PART OF THE RI/FS AND PFS PROCESSES, PUBLIC MEETINGS WERE HELD TO EXPLAIN THE INTENT OF THE PROJECT, TO DESCRIBE THE RESULTS, AND TO RECEIVE COMMENTS FROM THE PUBLIC. PUBLIC PARTICIPATION IN SUPERFUND PROJECTS IS REQUIRED BY THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN (NCP). COMMENTS RECEIVED FROM THE PUBLIC ARE CONSIDERED IN THE SELECTION OF THE REMEDIAL ACTION FOR THE SITE. THE STATE OF MICHIGAN CURRENTLY HAS THE LEAD ROLE FOR COMMUNITY RELATIONS AT THE FOREST WASTE DISPOSAL SITE.

THE PFS HAS BEEN MADE AVAILABLE FOR PUBLIC COMMENT. THIS RESPONSIVENESS SUMMARY SUMMARIZES THE COMMENTS

RECEIVED AND DESCRIBES HOW THEY WERE INCORPORATED INTO THE DECISIONMAKING PROCESS.

PUBLIC INVOLVEMENT ACTIVITIES

THE PLANNING PROCESS FOR THE RI AT THE FOREST WASTE DISPOSAL SITE BEGAN IN THE WINTER OF 1983. A CITIZENS INFORMATION COMMITTEE (CIC) WAS FORMED AT THAT TIME BY THE STATE OF MICHIGAN. THE CIC IS A GROUP OF LOCAL CITIZENS AND STATE, COUNTY AND LOCAL OFFICIALS WITH HIGH INTEREST IN SITE ACTIVITIES. THE U.S. EPA PARTICIPATES IN CIC MEETINGS. THE PURPOSES OF THE CIC ARE:

1) TO ENSURE THE COMMUNITY REPRESENTATIVES ARE INFORMED ABOUT FOREST WASTE SITE ACTIVITIES,

2) TO ENSURE LOCAL CITIZENS HAVE A CONSISTENT AND EASILY ACCESSIBLE MEANS OF RECEIVING UP-TO-DATE INFORMATION ABOUT THE SITE,

3) TO ADVISE U.S. EPA AND MICHIGAN DEPARTMENT OF NATURAL RESOURCES (MDNR) PROJECT STAFF REGARDING LOCAL CONCERNS.

THE CIC HAS HELD AND WILL CONTINUE TO HOLD MEETINGS PERIODICALLY (1-4 TIMES/YEAR), AS APPROPRIATE. IT HAS SERVED ITS PURPOSES WELL.

THREE OPEN PUBLIC MEETINGS HAVE BEEN HELD TO PRESENT AND EXPLAIN SITE ACTIVITIES TO THE COMMUNITY AND RECEIVE COMMUNITY RESPONSE TO THESE ACTIVITIES.

THE FIRST PUBLIC MEETING WAS HELD IN MAY 1984, AT THE START OF THE RI/FS, TO EXPLAIN THE SUPERFUND PROGRAM AND THE SCOPE OF THE RI/FS. THERE WERE APPROXIMATELY 50 ATTENDEES AT THE MEETING. COMMUNITY CONCERNS EXPRESSED AT THAT TIME INCLUDED TESTING OF RESIDENTIAL DRINKING WELLS AND PRIVATE PONDS, AND THE PAST ROLE OF THE GENESEE COUNTY HEALTH DEPARTMENT AND MDNR IN REGULATING THE SITE. INITIAL RI WORK INCLUDED WATER SAMPLES FROM PRIVATE PONDS OF SURROUNDING RESIDENTS. MDNR ALSO COLLECTED A COMPOSITE FISH SAMPLE FROM A PRIVATE POND ADJACENT TO THE SITE.

THE SECOND PUBLIC MEETING WAS HELD MAY 16, 1985 (100 ATTENDEES PLUS LOCAL PRESS) AND SERVED TO PROVIDE AN UPDATE FOR CITIZENS ON THE STATUS OF THE RI/FS. THE COMMUNITY EXPRESSED CONCERN ABOUT THE SEEMINGLY SLOW PROGRESS TOWARDS CLEANUP AT THE SITE. THE COMMUNITY ALSO EXPRESSED CONCERNS ABOUT TESTING OF THEIR DRINKING WELLS. IN SUMMER OF 1985 DRINKING WATER FROM SEVERAL RESIDENTS' WELLS SURROUNDING THE SITE WERE SAMPLED. NO EVIDENCE OF CONTAMINATION WAS FOUND.

THE PFS WAS COMPLETED IN APRIL 1986. THE U.S. EPA RECOMMENDED THAT REMOVAL, TREATMENT, AND DISPOSAL OF LAGOON LIQUIDS AND CONTAMINATED SLUDGES, SEDIMENT AND SOIL AT OFFSITE RCRA PERMITTED FACILITY IS AN APPROPRIATE, COST-EFFECTIVE, OPERABLE UNIT REMEDIAL RESPONSE ACTION.

THE 21-DAY PUBLIC COMMENT PERIOD TO REVIEW THE PFS WAS CONDUCTED FROM APRIL 14, 1986 THROUGH MAY 5, 1986. THE FOREST TOWNSHIP LIBRARY, IN THE FOREST TOWNSHIP HALL, SERVED AS A REPOSITORY FOR TWO COPIES OF THE STUDY. MDNR ISSUED A PRESS RELEASE IN THE FLINT JOURNAL ON APRIL 15, 1986 ANNOUNCING THE AVAILABILITY OF THE STUDY, THE PUBLIC COMMENT PERIOD, AND THE APRIL 21, 1986 PUBLIC MEETING TO PRESENT THE FINDINGS OF THE PFS AND PROVIDE AN RI/FS UPDATE.

THE PUBLIC MEETING ON THE EVENING OF APRIL 21, 1986 INCLUDED APPROXIMATELY 40 ATTENDEES. A CIC MEETING WAS HELD IN THE AFTERNOON OF APRIL 21. THE COMMUNITY WAS RECEPTIVE TO THE PRESENTATION OF THE PFS AND SUPPORTED THE RECOMMENDATION FOR ACTION ON THE LAGOONS. SOME CITIZENS EXPRESSED CONCERNS THAT THEY HAD BEEN DEALT WITH "UNFAIRLY" IN PAST OCCURRENCES AT THE SITE. THIS APPEARS TO BE RELATED TO THE WAY HAZARDOUS WASTES HAVE BEEN HANDLED IN THEIR NEIGHBORHOOD. THE RECOMMENDED ALTERNATIVE OF THE PFS, OFFSITE DISPOSAL OF THE SITE LAGOON WASTES, WAS EXPRESSED BY SOME CITIZENS AS THE ONLY ACCEPTABLE OPTION FOR REMEDIAL ACTION ON THE LAGOONS.

OTHER COMMUNITY RELATIONS ACTIVITIES AT THE FOREST WASTE DISPOSAL SITE INCLUDE PUBLIC DISTRIBUTION OF SIX FACT SHEETS. THERE IS AN ACTIVE MAILING LIST OF APPROXIMATELY 200 SURROUNDING RESIDENTS WHO RECEIVE THESE FACT SHEETS. THE FACT SHEETS SUMMARIZE SITE ACTIVITIES, FINDINGS, AND FUTURE PLANS.

COMMENTS AND RESPONSES

THREE PARTIES SUBMITTED WRITTEN COMMENTS ON THE PFS.

COMMENT NO. 1: A RESIDENT ADJACENT TO THE FOREST WASTE DISPOSAL SITE IS PLEASED THAT CLEANUP ACTION ON THE LAGOONS IS PROPOSED. THE GENESEE COUNTY HEALTH DEPARTMENT SUPPORTS THE SELECTED ALTERNATIVE AS THE MOST APPROPRIATE MEANS TO ADDRESS THE CLEANUP OF THE LAGOON AREA.

RESPONSE: THE U.S. EPA ACKNOWLEDGES THE SUPPORT OF THE COMMUNITY RESIDENT AND THE GENESEE COUNTY HEALTH DEPARTMENT. COMMENT NOS. 2 THROUGH 7 WERE SUBMITTED BY COMMON COUNSEL FOR THE FOREST WASTE COORDINATING COMMITTEE, WHICH IS COMPRISED OF A NUMBER OF THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FOR THE SITE.

COMMENT NO. 2: THE PHASED APPROACH TOWARDS SITE REMEDIATION AT THE FOREST WASTE DISPOSAL SITE IS INAPPROPRIATE. THE RISK ASSESSMENT PRESENTED IN CHAPTER 2 OF THE PHASED FEASIBILITY STUDY (PFS) DOES NOT ESTABLISH A SIGNIFICANT HEALTH OR ENVIRONMENTAL RISK TO WARRANT OR JUSTIFY IMMEDIATE REMEDIAL ACTION. THE INTAKE OF CONTAMINANTS BY HUMAN POPULATION, RESULTING FROM INGESTION OF LAGOON SEDIMENT, IS THE ONLY POTENTIAL ROUTE OF EXPOSURE OF LAGOON CONTAMINANTS QUANTITATIVELY ASSESSED AND ESTIMATED IN THE PFS. THE PFS FAILS TO CONSIDER THAT THE FENCE SURROUNDING THE SITE ADEQUATELY PROTECTS AGAINST THE PUBLIC HEALTH THREAT OF DIRECT INGESTION OF LAGOON SEDIMENTS.

RESPONSE: PURSUANT TO SECTION 300.68 (C)(1) OF THE NCP, THE OPERABLE UNIT REMEDIAL ACTION ON THE FOREST WASTE LAGOONS IS PROPOSED AT THIS TIME. THE PHASED APPROACH TOWARDS SITE REMEDIATION IS APPROPRIATE. THE AGENCY IS ACTING WITHIN ITS AUTHORITY TO SELECT AN OPERABLE UNIT REMEDIAL ACTION FOR THE SITE LAGOONS, AND TO IMPLEMENT THIS REMEDY BEFORE SELECTION OF FINAL REMEDIAL ACTION.

CHAPTER 2 OF THE PFS ESTABLISHES THAT A REMEDIAL RESPONSE ACTION ON THE LAGOONS IS APPROPRIATE. CONSISTENT WITH SECTION 300.68 (A)(1) OF THE NCP, THE PROPOSED REMEDIAL ACTION IS "CONSISTENT WITH PERMANENT REMEDY TO PREVENT OR MINIMIZE THE RELEASE OF HAZARDOUS SUBSTANCES OF POLLUTANTS OR CONTAMINANTS SO THAT THEY DO NOT MIGRATE TO CAUSE SUBSTANTIAL DANGER TO PRESENT OR FUTURE PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT".

CHAPTER 2 OF THE PFS DOES NOT INTEND TO "ESTABLISH A SIGNIFICANT HEALTH OR ENVIRONMENTAL RISK TO WARRANT OR JUSTIFY IMMEDIATE REMEDIAL ACTION" AS THE COMMENTERS CHARGE. CHAPTER 2, RATHER, CHARACTERIZES THE POTENTIAL ADVERSE EFFECTS TO HUMAN HEALTH OR THE ENVIRONMENT, POSED BY THE HAZARDOUS SUBSTANCES IN THE SITE LAGOONS, ASSUMING NO FURTHER REMEDIAL ACTION AND NO RESTRICTIONS ARE PLACED ON THE FUTURE USE OF THE PROPERTY (SEE PAGE 2-1 OF PFS).

AS THE COMMENTERS MENTION, THE PFS QUANTITATIVELY ASSESSES THE PUBLIC HEALTH EFFECTS OF EXPOSURE TO LAGOON CONTAMINANTS FROM DIRECT INGESTION OF LAGOON SEDIMENTS. THE CONCLUSION OF THE QUANTITATIVE ASSESSMENT IS AS FOLLOWS:

> IF THE SITE IS USED FOR RECREATIONAL AND/OR RESIDENTIAL PURPOSES, PROTECTION OF THE PUBLIC HEALTH AGAINST TOXICITY OF NONCARCINOGENS, AS MEASURED BY COMPARISON OF PROJECTED CONTAMINANT INTAKE TO ACCEPTABLE INTAKE, WOULD BE A CONCERN, ESPECIALLY FOR CHILDREN.

THE PFS ALSO PRESENTS AN ARRAY OF POTENTIAL DIRECT CONTACT EXPOSURE PATHWAYS (I.E., HUMAN INGESTION, HUMAN INHALATION, HUMAN DERMAL ABSORPTION, WILDLIFE INGESTION, ETC.) OF LAGOON CONTAMINANTS TO THE SURROUNDING PUBLIC AND ENVIRONMENT (SEE TABLE 2-1 OF PFS).

IT IS NOT POSSIBLE, PRACTICAL, OR NECESSARY TO GIVE AN IN-DEPTH QUANTITATIVE ASSESSMENT OF THE PUBLIC HEALTH AND ENVIRONMENTAL IMPACTS OF EXPOSURE VIA ALL THESE PATHWAYS. SPECIFIC INFORMATION ABOUT THE SITE CONTAMINATION AND A BODY OF SCIENTIFIC INFORMATION TO DETERMINE PUBLIC HEALTH AND ENVIRONMENTAL EFFECTS FROM SITE CONTAMINANTS VIA ALL THESE PATHWAYS HAS NOT BEEN DEVELOPED. ACKNOWLEDGEMENT OF THESE POTENTIAL EXPOSURE PATHWAYS, WITHOUT QUANTITATIVE ASSESSMENT, IS APPROPRIATE AND VALID.

THE PFS ALSO PRESENTS THE LAGOON WASTES AS A THREAT TO THE PUBLIC HEALTH AND THE ENVIRONMENT RELATIVE TO THEIR CONNECTION TO THE GROUNDWATER (SEE PAGE 2-2 OF PFS). CURRENT DATA INDICATE THAT THE LAGOONS HAVE RELEASED CONTAMINANTS TO THE GROUNDWATER. THE EXTENT OF THE EXISTING GROUNDWATER CONTAMINATION AND THE

POTENTIAL FOR FUTURE CONTAMINANT CONTRIBUTIONS ARE NOT YET FULLY DEFINED. ADDITIONAL FIELD ACTIVITIES ARE SCHEDULED TO BETTER DEFINE THESE ISSUES. THE PFS, THEREFORE, DID NOT PRESENT A QUANTITATIVE ASSESSMENT OF THE PUBLIC HEALTH AND ENVIRONMENTAL IMPACTS OF CONTAMINANT RELEASE TO THE GROUNDWATER. THIS RELEASE, AND POTENTIAL FOR FURTHER RELEASE, DOES CLEARLY MERIT MENTION IN A CHARACTERIZATION OF THE ADVERSE HUMAN HEALTH AND ENVIRONMENTAL EFFECTS OF LAGOON CONTAMINANTS.

THE PFS ADEQUATELY CONSIDERS THE ADEQUACY OF THE FENCE SURROUNDING THE SITE AND DETERMINES THAT REMEDIAL RESPONSE ACTIONS BEYOND FENCING ARE APPROPRIATE. THE FENCE SURROUNDING THE SITE SERVES TO REDUCE, RATHER THAN PREVENT EXPOSURE OF SITE CONTAMINANTS TO THE PUBLIC (SEE PAGE 2-4 OF PFS). THERE IS MUCH EVIDENCE THAT UNAUTHORIZED PERSONNEL HAVE VIOLATED THE FENCE AND ENTERED THE SITE, DESPITE EFFORTS BY U.S. EPA AND MDNR TO DISCOURAGE SUCH OCCURRENCES.

RESIDENTS ADJACENT TO THE SITE HAVE REPORTED TO U.S. EPA AND MDNR OBSERVING UNAUTHORIZED PERSONNEL AND VEHICLES INSIDE THE FENCE. THE FENCE GATES AND LOCKS HAVE SHOWN SIGNS OF OBVIOUS TAMPERING. TRACKS FROM UNAUTHORIZED VEHICLES HAVE BEEN OBSERVED ONSITE BY U.S. EPA AND MDNR.

THE FENCE DOES VERY LITTLE TO PREVENT EXPOSURE OF SITE CONTAMINANTS TO THE ENVIRONMENT. WILDLIFE FREELY ENTER AND LEAVE THE SITE. AS MENTIONED ABOVE, CURRENT DATA INDICATE THAT THE LAGOONS HAVE RELEASED CONTAMINANTS TO THE GROUNDWATER. REMEDIAL ACTION(S) BEYOND FENCING IS APPROPRIATE, RECOGNIZING THE PRESENCE AND UTILITY OF THE FENCE.

SECTION 300.68 (C)(3) OF THE NCP STATES "IMPLEMENTATION OF OPERABLE UNITS MAY BEGIN BEFORE SELECTION OF AN APPROPRIATE FINAL REMEDIAL ACTION IF SUCH MEASURES ARE COST-EFFECTIVE AND CONSISTENT WITH A PERMANENT REMEDY.". CHAPTERS 3, 4, 5, AND 6 OF THE PFS ESTABLISHED THE RECOMMENDED ALTERNATIVE AS COST-EFFECTIVE AND CONSISTENT WITH THE PERMANENT REMEDY.

IMPLEMENTATION OF THE OPERABLE UNIT REMEDIAL RESPONSE, PRIOR TO SELECTION OF THE FINAL REMEDIAL MEASURE, IS APPROPRIATE. THERE IS FULL DEFINITION OF THE LAGOON WASTES, WHICH IS A MAJOR SOURCE OF CONTAMINATION AT THE SITE. CURRENT DATA INDICATE THAT THE LAGOON CONTAMINANTS HAVE BEEN RELEASED TO THE GROUNDWATER. TO ALLEVIATE THIS AND OTHER ACTUAL OR POTENTIAL FURTHER RELEASES OF LAGOON CONTAMINANTS TO THE ENVIRONMENT AND SURROUNDING PUBLIC, THE OPERABLE UNIT REMEDIAL ACTION SHOULD BE IMPLEMENTED PRIOR TO SELECTION OF THE FINAL REMEDY.

COMMENT NO. 3: THE RECOMMENDED ALTERNATIVE IS INAPPROPRIATE AND NOT COST-EFFECTIVE. SELECTION OF THE RECOMMENDED ALTERNATIVE IS INCONSISTENT WITH THE NCP DUE TO THE FOLLOWING:

1) SECTION 300.68 (E)(2) OF THE NCP MANDATES THAT THE FOLLOWING, AS APPROPRIATE, SHALL BE CONSIDERED IN DETERMINING WHETHER AND WHAT TYPE OF REMEDIAL ACTIONS WILL BE CONSIDERED AT A SITE:

II) ROUTES OF EXPOSURE

IV) HYDROGEOLOGICAL FACTORS

V) CURRENT AND POTENTIAL GROUNDWATER USE

VII) THE EXTENT TO WHICH THE SOURCE CAN BE ADEQUATELY IDENTIFIED AND CHARACTERIZED

THE PFS DID NOT EVALUATE THE ABOVE CONSIDERATIONS.

2) THE RECOMMENDED ALTERNATIVE IS NOT COST-EFFECTIVE BECAUSE ITS COST IS DOUBLE THAT OF ALTERNATIVE 2 AND THREE TIMES THAT OF ALTERNATIVE 3.

RESPONSE: THE PURPOSE OF THE PFS IS TO EVALUATE REMEDIAL TECHNOLOGIES IN ORDER TO RECOMMEND AN APPROPRIATE, COST-EFFECTIVE OPERABLE UNIT REMEDIAL MEASURE. THE PFS CONCLUDES THAT THE RECOMMENDED ALTERNATIVE IS APPROPRIATE AND COST-EFFECTIVE.

THE FOUR FACTORS WHICH THE COMMENTERS CHARGE HAVE NOT BEEN CONSIDERED, HAVE, INDEED, BEEN ADEQUATELY

CONSIDERED. THE ROUTES OF EXPOSURE OF CONTAMINANTS (II) ARE COMPREHENSIVELY DISCUSSED IN CHAPTER 2 OF THE PFS. THE APPROPRIATE HYDROGEOLOGIC FACTORS ABOUT THE SITE (IV) ARE MENTIONED IN CHAPTER 1, PAGES 1-7 AND 1-8 OF THE PFS. MENTION OF RESIDENTIAL WELLS ON PAGE 1-7 INDICATES THAT THE GROUNDWATER IN THE AREA IS USED (V) FOR DRINKING WATER. THE LAGOON WASTES ARE THE SOURCE OF CONTAMINATION AND ARE ADEQUATELY IDENTIFIED AND CHARACTERIZED (VII) IN CHAPTER 1 OF THE PFS. RECORDS CONCERNING THE COMPOSITION OF THE SOURCE ARE AVAILABLE AND ARE SUMMARIZED ON PAGE 1-8. ANALYTICAL DATA ABOUT THE SOURCE WERE COLLECTED FROM 1978 THROUGH 1984 AND ARE SUMMARIZED ON PAGES 1-8 THROUGH 1-22.

CHAPTERS 3, 4, 5 AND 6 OF THE PFS ESTABLISHED THE RECOMMENDED ALTERNATIVE AS COST-EFFECTIVE.

CLEARLY, FACTORS OTHER THAN COST MERIT CONSIDERATION IN A COST-EFFECTIVENESS DETERMINATION. THE COMMENTERS' CONCLUSION THAT ALTERNATIVE NO. 1 IS NOT COST-EFFECTIVE BECAUSE ITS ECONOMIC COSTS (I.E., PRESENT WORTH VALUE) EXCEED THOSE OF ALTERNATIVES NOS. 2 AND 3, IS NOT VALID. IN ACCORDANCE WITH THE NCP (SECTION 300.68(I)), OTHER FACTORS WERE CONSIDERED AND EVALUATED IN THE COST-EFFECTIVENESS EVALUATION OF ALTERNATIVES. SECTION 300.68 (I)(2) STATES:

> "IN SELECTING THE APPROPRIATE EXTENT OF REMEDY FROM AMONG ALTERNATIVES THAT WILL ACHIEVE ADEQUATE PROTECTION OF PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT IN ACCORDANCE WITH 300.68 (I)(1), THE LEAD AGENCY WILL CONSIDER COST, TECHNOLOGY, RELIABILITY, ADMINISTRATIVE AND OTHER CONCERNS, AND THEIR RELEVANT EFFECTS ON PUBLIC HEALTH AND WELFARE AND THE ENVIRONMENT.".

ALTERNATIVE NOS. 1, 2, AND 3, WHICH WERE DEVELOPED AND ANALYZED IN CHAPTER 6 OF THE PFS, WERE THE REMEDIAL ALTERNATIVES CONSIDERED.

TECHNOLOGY, RELIABILITY, AND ADMINISTRATIVE CONCERNS ARE VALID COST-EFFECTIVENESS CONSIDERATIONS. IF ANY ONE OF THESE COMPONENTS IS POOR OR COMPLICATED, ADDITIONAL UNEXPECTED COSTS CAN BE INCURRED. ALTERNATIVE NO. 1 IS CLEARLY SUPERIOR TO ALTERNATIVE NOS. 2 AND 3 IN TERMS OF TECHNOLOGY AND RELIABILITY.

ALTERNATIVE NO. 1 USES THE MOST SIMPLE, STRAIGHT-FORWARD TECHNOLOGY OF THE THREE ALTERNATIVES. CONVENTIONAL CONSTRUCTION METHODS ARE USED IN IMPLEMENTING THIS REMEDY AND RESULTS ARE REALIZED WITHIN APPROXIMATELY ONE MONTH AFTER INITIATION OF CONSTRUCTION. ALTERNATIVES NOS. 2 AND 3 ARE MORE COMPLEX AND REQUIRE MORE TIME THAN ALTERNATIVE NO. 1, AND MAY BE DIFFICULT TO IMPLEMENT DUE TO MICHIGAN LAW REGULATIONS.

ALL THREE ALTERNATIVES INVOLVE THE HANDLING AND DISPOSAL OF HAZARDOUS AND/OR SOLID WASTE. THE MICHIGAN HAZARDOUS WASTE MANAGEMENT ACT (ACT 64) AND THE MICHIGAN SOLID WASTE MANAGEMENT ACT (SWMA) REGULATE THE WASTE HANDLING AND DISPOSAL PROCEDURES PROPOSED IN THE THREE ALTERNATIVES. THE TECHNICAL REQUIREMENTS OF THESE TWO LAWS MUST BE SATISFIED OR DELAYS IN IMPLEMENTATION CAN BE EXPECTED.

BOTH OF THESE LAWS IMPOSE PERMITTING REQUIREMENTS. THE NCP STATES THAT STATE PERMITS ARE NOT REQUIRED FOR FUND-FINANCED REMEDIAL ACTIONS (40 CFR SECTION 300.68 (3)). IT IS, HOWEVER, THE INTENTION OF THE CERCLA PROGRAM TO COMPLY, AS APPROPRIATE, WITH ALL THE TECHNICAL REQUIREMENTS OF ANY STATE PERMITS WHEN IMPLEMENTING FUND-FINANCED REMEDIAL ACTIONS. IF THE TECHNICAL REQUIREMENTS OF STATE PERMITS ARE SUBSTANTIALLY MORE STRINGENT THAN FEDERAL REQUIREMENTS AND WOULD INVOLVE SUBSTANTIAL ADDITIONAL COSTS, COMPLIANCE WOULD LIKELY NOT BE APPROPRIATE. THE TECHNICAL REQUIREMENTS OF APPLICABLE AND/OR RELEVANT MICHIGAN ENVIRONMENTAL LAWS ARE NOT MORE STRINGENT THAN APPLICABLE AND/OR RELEVANT FEDERAL REQUIREMENTS FOR THE FOREST WASTE OPERABLE UNIT. THE TECHNICAL REQUIREMENTS OF THE TWO STATE LAWS ARE NOT MET FOR ALTERNATIVE NOS. 2 AND 3 AS WRITTEN, AND THIS MAY PREVENT AND/OR DELAY SMOOTH IMPLEMENTATION OF THESE ALTERNATIVES. ALL TECHNICAL REQUIREMENTS OF ACT 64 ARE EASILY MET FOR ALTERNATIVE NO. 1. THE SWMA IS NOT APPLICABLE TO ALTERNATIVE NO. 1.

THE LAGOON SEDIMENTS FROM LAGOON NO. 4 ARE THE ONLY WASTES BEING ADDRESSED IN THIS OPERABLE UNIT THAT ARE DEFINED AS HAZARDOUS UNDER ACT 64. DATA COLLECTED TO DATE INDICATE THAT WASTES FROM LAGOON NO. 4 ONLY HAVE HAZARDOUS WASTE CHARACTERISTICS (I.E.: E.P. TOXICITY RESULTS FROM SAMPLING INDICATES LEAD EXCEEDS SPECIFIC E.P. TOXICITY LIMIT OF 5.0 MG/L).

ACT 64 IMPACTS THE IMPLEMENTATION OF ALTERNATIVE NO. 1 TO A SLIGHT DEGREE. WASTES FROM LAGOON NO. 4 CAN BE HANDLED AS DESCRIBED AFTER MEETING THE TECHNICAL REQUIREMENTS FOR A TREATMENT FACILITY PERMIT UNDER ACT 64. THE SOLIDIFICATION IS CONSIDERED TO BE A FORM OF TREATMENT UNDER ACT 64. THE REQUIREMENT WOULD INVOLVE AN

EVALUATION OF THE POTENTIAL AIR EMISSIONS PROBLEM ASSOCIATED WITH THE PROPOSED TREATMENT, AND AN EVALUATION OF PROTECTIVE MEASURES PROPOSED TO DEAL WITH THIS POTENTIAL PROBLEM.

IN ALTERNATIVE NO. 2, THE TREATMENT OF LAGOON NO. 4 SEDIMENTS WOULD ALSO REQUIRE COMPLIANCE WITH THE TECHNICAL REQUIREMENTS OF ACT 64 FOR A TREATMENT FACILITY. FURTHERMORE, AN EVALUATION OF THE WASTE AFTER TREATMENT WOULD ALSO BE NEEDED BEFORE THE WASTE WAS LAND DISPOSED IN LAGOON NOS. 2 AND 4. IF THE WASTE REMAINED CHARACTERIZED AS HAZARDOUS, THE TECHNICAL REQUIREMENTS OF AN ACT 64 DISPOSAL FACILITY WOULD NEED TO BE MET. THIS WOULD INVOLVE THE INSTALLATION OF A DOUBLE LINER AND LEACHATE COLLECTION SYSTEM. IF THE WASTE, AFTER TREATMENT, WAS NO LONGER CHARACTERIZED AS HAZARDOUS, THE WASTES WOULD NEED TO BE DISPOSED OF IN ACCORDANCE WITH THE TECHNICAL REQUIREMENTS OF THE SWMA. THIS WASTE WOULD BE CONSIDERED NON-INERT MATERIAL AND, THEREFORE, REQUIRE DISPOSAL IN A TYPE II LANDFILL. THIS WOULD REQUIRE THE INSTALLATION OF A SINGLE LINER AND LEACHATE COLLECTION SYSTEM. ALTERNATIVE NO. 2 OBVIOUSLY DOES NOT MEET THE TECHNICAL REQUIREMENTS OF ACT 64 AND/OR SWMA.

IN ALTERNATIVE NO. 3, LAGOON NO. 4 SEDIMENTS ARE NOT REMOVED DURING TREATMENT OR DISPOSAL. THEREFORE, SINCE THESE WASTES WERE DISPOSED OF PRIOR TO 1980, ACT 64 REGULATIONS AND ASSOCIATED PERMITTING REQUIREMENTS ARE NOT APPLICABLE. THESE WASTES SHOULD BE HANDLED IN ACCORDANCE WITH THE TECHNICAL REQUIREMENTS OF THE SWMA. AS IN ALTERNATIVE NO. 2, THIS WOULD REQUIRE INSTALLATION OF A SINGLE LINER AND LEACHATE COLLECTION SYSTEM. ALTERNATIVE NO. 3 OBVIOUSLY DOES NOT MEET THE TECHNICAL REQUIREMENTS OF THE SWMA.

ALTERNATIVE NOS. 2 AND 3 REQUIRE OPERATIONS AND MAINTENANCE (O&M), WHICH INCUR O&M COSTS INDEFINITELY. ALTERNATIVE NO. 1 HAS NO O&M.

ALTERNATIVE NO. 1 INCORPORATES THE USE OF OPERATIONALLY ROUTINE WASTE HANDLING TECHNOLOGIES. THE SOLIDIFICATION TREATMENT HAS PROVEN PERFORMANCE FOR STABILIZING WASTE. DISPOSAL OF THE SOLIDIFIED WASTE WILL BE IN A RCRA-COMPLIANT FACILITY WHICH IS CONSIDERED A HIGHLY RELIABLE DISPOSAL OPTION. A DOUBLE-LINER AND LEACHATE COLLECTION SYSTEM WILL INSURE PROPER CONTAINMENT OF THE WASTE.

ALTERNATIVE NOS. 2 AND 3 INCORPORATE THE USE OF LESS ROUTINE WASTE HANDLING TECHNOLOGIES THAN ALTERNATIVE NO. 1. THE INTENTION OF THE PRECIPITATION TREATMENT IN THESE ALTERNATIVES IS TO PREVENT SOLUTION OF METALS, BUT NOT ORGANIC CONTAMINANTS, TO THE GROUNDWATER. ALTERNATIVE NO. 2 PROVIDES FOR A SOLIDIFICATION TREATMENT, BUT ALTERNATIVE NO. 3 DOES NOT. IN BOTH ALTERNATIVES, THE WASTE IS LAND DISPOSED ONSITE IN AN AREA POORLY SUITED FOR LAND DISPOSAL. THE GROUNDWATER TABLE ONSITE IS SHALLOW (8 TO 30 FEET BELOW THE GROUND SURFACE). A SURFACE WATER BODY, BUTTERNUT CREEK, IS APPROXIMATELY 2500 FEET EAST OF THE LAGOONS, AND RESIDENTS ARE ADJACENT TO THE SITE. THE LAND DISPOSAL OPTION IN ALTERNATIVE NOS. 2 AND 3 DO NOT PROVIDE FOR A DOUBLE LINER AND LEACHATE COLLECTION SYSTEM, AND IN FACT, PROVIDE FOR NO PHYSICAL BARRIER UNDERNEATH THE LAND DISPOSED WASTE. ALTERNATIVE NO. 2 DEPENDS SOLELY ON THE PRECIPITATION/ SOLIDIFICATION TREATMENT AND CAP TO PREVENT FURTHER GROUNDWATER CONTAMINATION. ALTERNATIVE NO. 3 DEPENDS SOLELY ON THE PRECIPITATION TREATMENT TO PREVENT FURTHER GROUNDWATER CONTAMINATION.

IN A COMPLETE COST-EFFECTIVENESS ANALYSIS, ALTERNATIVE NO. 1 IS CLEARLY SUPERIOR TO ALTERNATIVE NOS. 2 AND 3 IN TERMS OF TECHNICAL IMPLEMENTABILITY AND RELIABILITY. IN ORDER TO APPROACH THE STANDARD OF RELIABILITY PROVIDED IN ALTERNATIVE NO. 1, ALTERNATIVE NOS. 2 AND 3 WOULD NEED TO PROVIDE FOR A DOUBLE-LINER AND LEACHATE COLLECTION SYSTEM.

THIS WOULD REQUIRE AN INCREASE IN CAPITAL COSTS LIKELY EXCEEDING THE ESTIMATED ADDITIONAL COSTS OF ALTERNATIVE NO. 1. EVEN WITH A DOUBLE LINER AND LEACHATE COLLECTION SYSTEM, ALTERNATIVE NOS. 2 AND 3 WOULD NOT PROVIDE THE RELIABILITY OF ALTERNATIVE NO. 1 BECAUSE OF THE POOR SUITABILITY OF THE SITE FOR LAND DISPOSAL. THE TECHNICAL IMPLEMENTABILITY OF ALTERNATIVE NOS. 2 AND 3 WOULD, FURTHERMORE, BECOME SIGNIFICANTLY MORE COMPLEX WITH THE ADDITION OF A DOUBLE LINER AND LEACHATE COLLECTION SYSTEM.

THE TECHNOLOGY (EXCAVATION AND TRANSPORT) IN ALTERNATIVE NO. 1 HAS BEEN DEMONSTRATED AND IS CONSIDERED RELIABLE. ALTERNATIVE NOS. 2 AND 3 RELY ON A TREATMENT TECHNOLOGY WHICH HAS NOT BEEN TESTED ON THE FOREST WASTE LAGOON WASTES. THIS TREATMENT TECHNOLOGY, FURTHERMORE, ADDRESSES ONLY THE INORGANIC WASTE CONTAMINANTS. THE KNOWN ORGANIC WASTES WOULD BE UNAFFECTED BY THE TREATMENT.

IN A COMPLETE COST-EFFECTIVENESS ANALYSIS, ALTERNATIVE NO. 1 IS A COST-EFFECTIVE REMEDIAL MEASURE.

DEMONSTRATED EASILY IMPLEMENTED TECHNOLOGY AND SUPERIOR RELIABILITY ASSOCIATED WITH THIS ALTERNATIVE SUPPORT ITS SELECTION.

COMMENT NO. 4: THE SELECTION OF ALTERNATIVE NO. 1 IGNORES THE U.S. EPA OFFSITE RESPONSE ACTION POLICY (HEREAFTER, OFFSITE POLICY) (FEDERAL REGISTER, VOLUME 50, NO. 214, PAGES 45933-45937). LACK OF CONSIDERATION OF TREATMENT AND RECYCLING/REFUSE TECHNOLOGIES, ONSITE REMEDIES, AND PERMANENT SOLUTIONS RENDER SELECTION OF ALTERNATIVE NO. 1 INCONSISTENT WITH THE OFFSITE POLICY.

RESPONSE: THE OFFSITE POLICY ESTABLISHES U.S. EPA'S POLICY FOR CONSIDERATION OF TREATMENT TECHNOLOGIES FOR RESPONSE ACTIONS, WHENEVER FEASIBLE, AND ESTABLISHES CRITERIA FOR SELECTING ANY OFFSITE STORAGE, TREATMENT, OR DISPOSAL FACILITY NECESSARY IN CERCLA ACTIONS. THE PURPOSE OF THIS POLICY IS TO FOSTER THE USE OF MORE PERMANENT SOLUTIONS TO HAZARDOUS SUBSTANCES, INCLUDING PERMANENT METHODS FOR MANAGING HAZARDOUS SUBSTANCES. THE POLICY DOES NOT NECESSARILY ENDORSE ONSITE REMEDIES AS THE COMMENTERS CLAIM.

A DETAILED DISCUSSION OF POTENTIAL TREATMENT AND RECYCLING TECHNOLOGIES FOR SITE REMEDIATION IS PRESENTED IN CHAPTER 3 AND SCREENED IN CHAPTER 4 OF THE PFS. IN CHAPTER 5, A SOLIDIFICATION TREATMENT TECHNOLOGY IS INCORPORATED INTO ALTERNATIVE NO. 1, A CHEMICAL PRECIPITATION/SOLIDIFICATION TREATMENT IS INCORPORATED INTO ALTERNATIVE NO. 2, AND A CHEMICAL PRECIPITATION TREATMENT TECHNOLOGY IS INCORPORATED INTO ALTERNATIVE NO. 3. OFFSITE TREATMENT AND DISCHARGE OF LAGOON LIQUIDS IS INCORPORATED INTO ALL THREE ALTERNATIVES. THESE CONSIDERATIONS OF TREATMENT AND RECYCLING TECHNOLOGIES ARE IN ACCORDANCE WITH THE OFFSITE POLICY. THE GOAL TO FOSTER MORE PERMANENT SOLUTIONS TO HAZARDOUS SUBSTANCES IS ACHIEVED BY SELECTION OF ALTERNATIVE NO. 1 WHICH INCORPORATES THE USE OF SOLIDIFICATION TREATMENT TECHNOLOGY FOR THE LAGOON SLUDGE AND AN OFFSITE RCRA TREATMENT TECHNOLOGY FOR THE LAGOON LIQUIDS.

THE OFFSITE DISPOSAL FACILITY TO BE USED IN ALTERNATIVE NO. 1 WILL COMPLY WITH THE APPLICABLE TECHNICAL REQUIREMENTS OF RCRA, PURSUANT TO THE OFFSITE POLICY. SELECTION OF SUCH A FACILITY FOSTERS THE USE OF MORE PERMANENT METHODS OF MANAGING HAZARDOUS SUBSTANCES. THE ONSITE LAND DISPOSAL OPTIONS INCORPORATED IN ALTERNATIVE NOS. 2 AND 3 DO NOT PROVIDE FOR FACILITIES WHICH ARE IN COMPLIANCE WITH THE TECHNICAL REQUIREMENTS OF RCRA, AND FURTHER REQUIREMENTS OF THE OFFSITE POLICY, AND IN THIS SENSE DO NOT FOSTER THE USE OF MORE PERMANENT METHODS OF MANAGING HAZARDOUS SUBSTANCES. THIS RENDERS SUPPORT OF THE SELECTION OF ALTERNATIVE NO. 1 OVER ALTERNATIVE NOS. 2 AND 3.

THE SELECTION OF ALTERNATIVE NO. 1 CLEARLY CONSIDERS AND FOLLOWS THE OFFSITE POLICY. SELECTION OF THIS ALTERNATIVE FOSTERS THE USE OF MORE PERMANENT SOLUTIONS TO HAZARDOUS SUBSTANCES.

COMMENT NO. 5: THE PFS DOES NOT DISCUSS OR CONSIDER THE PROBLEM OF LOCATING AN OFFSITE RCRA LANDFILL FACILITY WHICH IS CAPABLE OF HANDLING THE WASTE IN THE GEOGRAPHIC PROXIMITY OF THE SITE.

RESPONSE: THE PFS COSTS ARE BASED ON AN OFFSITE RCRA LANDFILL FACILITY APPROXIMATELY 100 MILES FROM THE SITE, WAYNE DISPOSAL IN BELLVILLE, MICHIGAN. CURRENTLY WAYNE DISPOSAL IS NOT IN COMPLIANCE WITH OFFSITE POLICY. IT IS EXPECTED, HOWEVER, THAT AT THE TIME OF REMEDY IMPLEMENTATION, WAYNE DISPOSAL WILL GAIN COMPLIANCE WITH THE OFFSITE POLICY, AND THEREFORE, RENDER ITSELF AVAILABLE TO ACCEPT THE FOREST WASTE DISPOSAL LAGOON WASTES.

IF THIS FACILITY IS NOT IN COMPLIANCE WITH THE OFFSITE POLICY AT THE TIME OF REMEDY IMPLEMENTATION, DISPOSAL OF THE WASTE AT A COMPLIANT FACILITY A GREATER DISTANCE FROM THE SITE MAY BE CONSIDERED. A COST EVALUATION OF THE USE OF SUCH A FACILITY WILL BE MADE AT THAT TIME TO DETERMINE IF THE FACILITY CAN BE USED AT A COST WITHIN THE ORDER-OF-MAGNITUDE COST ESTIMATE PRESENTED IN THE PFS. IF NOT, U.S. EPA, IN CONJUNCTION WITH THE MDNR, WILL DECIDE WHETHER TO SPEND ADDITIONAL FUNDS TO TAKE THE WASTE TO THE MORE DISTANT FACILITY OR TO KEEP THE WASTE AT THE SITE UNTIL WAYNE DISPOSAL COMES INTO COMPLIANCE. REMEDIATION FOR THE LIQUIDS AND THE TREATMENT FOR THE SOLIDS CAN BE ACCOMPLISHED WITHOUT LANDFILL AVAILABILITY.

COMMENT NO. 6: ALTERNATIVE NOS. 2 OR 3, OR SOME SIMILAR REMEDIAL ACTION, ARE MORE APPROPRIATE THAN ALTERNATIVE NO. 1. ALTERNATIVE NOS. 2 AND 3 ARE COST-EFFECTIVE REMEDIAL MEASURES.

RESPONSE: THE DISCUSSION OF THE COST-EFFECTIVENESS OF ALTERNATIVE NO. 1, PRESENTED IN THE RESPONSE TO COMMENT NO. 3, SUPPORTS THE SELECTION OF ALTERNATIVE NO. 1 OVER ALTERNATIVE NOS. 2 AND 3.

COMMENT NO. 7: ALTERNATIVE NOS. 2 AND 3 HAVE BEEN IMPROPERLY DISMISSED FROM CONSIDERATION BASED UPON ILLUSORY REGULATORY PROBLEMS. THESE PROBLEMS ARE AS FOLLOWS:

1. ALTERNATIVE NOS. 2 AND 3 DO NOT ATTAIN ALL APPLICABLE FEDERAL REQUIREMENTS.

2. ALTERNATIVE NO. 2 MAY VIOLATE RCRA REGULATIONS.

3. ALTERNATIVE NOS. 2 AND 3 MUST OBTAIN DISPOSAL FACILITY PERMITS UNDER MICHIGAN'S HAZARDOUS WASTE MANAGEMENT ACT.

RESPONSE: ALTERNATIVE NO. 1 WAS CHOSEN AS THE COST-EFFECTIVE REMEDIAL ACTION OVER ALTERNATIVE NOS. 2 AND 3 BASED ON CONSIDERATIONS OF TECHNICAL IMPLEMENTABILITY AND RELIABILITY AS PRESENTED IN THE RESPONSE TO COMMENT NO. 3. ALTERNATIVE NO. 1 WAS ALSO CHOSEN OVER ALTERNATIVE NOS. 2 AND 3 BECAUSE IT BETTER PROTECTS PUBLIC HEALTH AND THE ENVIRONMENT AND IT IS MORE CONSISTENT WITH PERMANENT REMEDY AT THE SITE. ALTERNATIVE NOS. 2 AND 3 WERE NOT DISMISSED FROM CONSIDERATION BASED ON ILLUSORY REGULATORY PROBLEMS.

THE STATEMENT IN THE PFS THAT IMPLEMENTATION OF ALTERNATIVE NOS. 2 AND 3 WOULD REQUIRE DISPOSAL FACILITY PERMITS UNDER THE MICHIGAN HAZARDOUS WASTE MANAGEMENT ACT (ACT 64) IS INCORRECT. LIKEWISE, THE STATEMENT IN THE PFS THAT IMPLEMENTATION OF ALTERNATIVE NO. 1 WOULD REQUIRE AN ONSITE TREATMENT FACILITY PERMIT UNDER ACT 64 IS ALSO INCORRECT. AS MENTIONED IN THE RESPONSE TO COMMENT NO. 3, SECTION 300.68 (A) (3) OF THE NCP INDICATES THAT STATE PERMITS ARE NOT REQUIRED FOR FUND-FINANCED CERCLA REMEDIAL ACTIONS.

HOWEVER, AS ALSO MENTIONED IN THE RESPONSE TO COMMENT NO. 3, IT IS THE INTENTION OF THE CERCLA PROGRAM TO COMPLY WITH THE TECHNICAL REQUIREMENTS OF STATE PERMITS. THE TECHNICAL REQUIREMENTS OF ACT 64 ARE EASILY MET IN ALTERNATIVE NO. 1. THE REQUIREMENTS OF ACT 64 AND/OR THE SWMA ARE NOT MET IN ALTERNATIVE NOS. 2 AND 3. WHILE THIS FACT WOULD NOT MAKE THESE ALTERNATIVES IMPOSSIBLE TO IMPLEMENT, IT DOES RENDER THEM LESS DESIRABLE AND MORE DIFFICULT TO IMPLEMENT THAN ALTERNATIVE NO. 1. THE STATE CAN EXERCISE THE OPTION TO WITHHOLD THEIR SUPPORT AND 10 PERCENT COST SHARE FOR ANY ALTERNATIVE. IF A GIVEN ALTERNATIVE DOES NOT COMPLY WITH THE TECHNICAL REQUIREMENTS OF STATE PERMITS, AS IS THE CASE IN ALTERNATIVE NOS. 2 AND 3, IT IS LIKELY THAT THE STATE WOULD WITHHOLD THEIR SUPPORT AND 10 PERCENT COST SHARE. WITHOUT THE STATE COST SHARE, A FUND-FINANCED REMEDY CANNOT BE IMPLEMENTED.

TABLE 2
ANALYTICAL RESULTS OF SURFACE IMPOUNDMENT SAMPLING AT FOREST WASTE DISPOSAL

PCB ISOMER	SI #1 *	SI #2 *	SI #3 *
AROCLOR - 1260 (UG/L)	K0.1	K1.5	K0.1
AROCLOR - 1254 (UG/L)	K0.1	K1.5	K0.1
AROCLOR - 1242 (UG/L)	K0.1	37	K0.1

K = LESS THAN
* IDENTITY OF SURFACE IMPOUNDMENTS SAMPLED IS UNKNOWN. SAMPLED BY OIL AND HAZARDOUS MATERIAL CONTROL, MDNR, ON 9-18-79; ANALYSIS BY THE MDNR ENVIRONMENTAL LAB.

TABLE 6
AQUEOUS LAGOON INORGANICS

LAGOON NO:	2	4	4	8		
SAMPLE LOCATION:	LG10201	LG10401	LG10401D	LG10801	LG95101	SW95102
ITR NUMBER:	ME2732	ME2733	ME2734	ME2735	ME2736	ME2745
INORGANIC COMPOUNDS (UG/L)						
ALUMINUM		873	445		126	
ANTIMONY			22			
ARSENIC			10.3			
BARIUM	300	316	246	116		
IRON	1,138	705	385	636	165	15
LEAD						10
MANGANESE	300	71	60	142		
ZINC	966	64	34	1,760	11	11

NOTE: SAMPLE SW95102 AND LG95101 ARE FIELD BLANKS ALL ORGANIC COMPOUNDS ON THE HSL * HAVE BEEN ANALYZED FOR BLANK SPACES INDICATE THE COMPOUND WAS NOT FOUND FOR THAT SAMPLE LEAD AND CYANIDE DATA WERE UNUSABLE

* HAZARDOUS SUBSTANCE LIST.

TABLE 7
LAGOON SEDIMENT INORGANICS

LAGOON NO:	2	3	4	8	8	
SAMPLE LOCATION;	SD10201	SD10301	SD10401	SD10801	SD10801D	SD95202
ITR NUMBER:	ME2764	ME2763	ME2762	ME2765	ME2767	ME2766
INORGANIC COMPOUNDS (MG/KG DRY WEIGHT)						
ALUMINUM	3,930	4,370	25,200	9,570	8,450	204
ANTIMONY	101	5.1	13	1.7	1.8	
ARSENIC	6	11	23	20	26	1
BARIUM	8,210	792	6,190	97	180	
BERYLLIUM				0.43	0.32	
CADMIUM	0.46	1.4	0.8	0.089	0.065	0.14
CHROMIUM	1,210	102	550	12	22	5.9
COBALT	13	7.9	13	7.3	6	
COPPER	61	275	116	13	14	
IRON	11,000	28,300	15,400	17,200	17,800	325
LEAD	4,770	364	1,270	37	59	
CYANIDE		0.65				
MANGANESE	108	612	200	226	170	5.7
NICKEL	58	2,500	44	14	14	4.9
SELENIUM		0.21	1.2	0.29	0.15	0.12
SILVER	0.72	0.6				
TIN		50	5.9	1.8	1.3	12
VANADIUM		14	14	20	18	14
ZINC	12,700	459	1,380	88	177	7.1

NOTE: SAMPLE SD95202 IS A FIELD BLANK ALL INORGANIC COMPOUNDS ON THE HSL * HAVE BEEN ANALYZED FOR BLANK SPACES INDICATE THE COMPOUND WAS NOT FOUND FOR THAT SAMPLE

* HAZARDOUS SUBSTANCE LIST.

TABLE 8
ORGANIC SOIL RESULTS

LAGOON NO:	7	9		
SAMPLE LOCATION:	SL10701	SL10901	SD950001	SL95002
OTR NUMBER:	E8925	E8926	E8814	E8927
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
ORGANIC COMPOUNDS				
VOLATILE				
BENZENE	60 B	58 B		41 B
METHYLENE CHLORIDE		11 B	5 B,J	7 B
ACETONE				
2-BUTANONE	2 J	38		4 J
4-METHYL-2-PENTANONE		4 J		
1,1,1-TRICHLOROETHANE				
BASE/NEUTRAL AND ACID COMPOUNDS				
BIS(2-ETHYLHEXYL)PHTHALATE	88 J,B	140 J,B	180	530 B
DI-N-BUTYL PHTHALATE	2,100 J	93 J	330	500
FLUORANTHENE				
PYRENE				
CHRYSENE				
BENZO(B)FLUORANTHENE				
BENZO(K)FLUORANTHENE				
BENZO(A)ANTHRACENE				
BENZO(A)PYRENE				
INDENO(1,2,3-CD)PYRENE				
DIBENZO(A,H)ANTHRACENE				
BENZO(G,H,I)PERYLENE				
BUTYLBENZYLPHTHALATE				

SAMPLE LOCATION:	SL10701	SL10901	SD950001	SL95002
OTR NUMBER:	E8932	E8933	E8815	E8934
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
PESTICIDE/PCBS/PBBS				
DIELDRIN				
ENDOSULFAN SULFATE				
4,4-DDT				
4,4-DDE				
PBBS				

FOOTNOTES:

J: INDICATES AN ESTIMATED VALUE (COMPOUND DETECTED BELOW QUANTIFICATION LIMIT)
B: ANALYTE HAS BEEN FOUND IN THE LABORATORY BLANK AS WELL AS THE SAMPLE INDICATES POSSIBLE CONTAMINATION

NOTE: SAMPLES LG95101 AND SW95102 ARE FIELD BLANKS ALL ORGANIC COMPOUNDS ON THE HSL * HAVE BEEN ANALYZED FOR
BLANK SPACES INDICATE THE COMPOUND WAS NOT FOUND FOR THAT SAMPLE
* HAZARDOUS SUBSTANCE LIST.

TABLE 10
INORGANIC CONSTITUENT CONCENTRATIONS
REPORTED IN BACKGROUND SOIL SAMPLES COLLECTION AUGUST 1985

SAMPLE LOCATION:	SL001	SL003	SL004	SL014	SL015		
INORGANIC COMPOUNDS (MG/KG)						CONCENTRATIONS MAXIMUM	MINIMUM
ALUMINUM	3,230	2,130	2,760	2,710	3,450	3,450	2,130
ANTIMONY							
ARSENIC	4				1.8	4	
BARIUM	36	54	36	30	34	54	30
BERYLLIUM	0.26					0.26	
CADMIUM							
CALCIUM	2,000	413	753	575	717	2,000	413
CHROMIUM	7.7		4.6	3.7	6.1	7.7	
COBALT	4.8		3.8	2.2	5.5	5.5	
COPPER	10	5.1	6.2	4.7	7.3	10	4.7
IRON	8,000	5,700	5,960	4,630	8,040	8,040	4,630
LEAD	18	8.2	8.3	6.4	7.9	18	6.4
MAGNESIUM	1,060	265	658	449	958	1,060	265
MANGANESE	322	1,010	429	290	368	1,010	290
MERCURY							
NICKEL	4.2		4.8	4.1	6.3	6.3	
POTASSIUM	694					694	
SILVER				1.9	2.4	2.4	
SODIUM	1,900		1,360			1,900	
VANADIUM	11	5.6	8	6.2	13	13	5.6
ZINC	38	106	36	23	32	106	23

NOTE: ALL CONCENTRATIONS REPORTED IN MG/KG BLANK SPACES INDICATE COMPOUND NOT DETECTED SAMPLE LOCATIONS USED TO ESTIMATE BACKGROUND CONCENTRATIONS ARE SHOWN IN FIGURE 4.

TABLE 11
SUMMARY OF VOLATILE ORGANIC COMPOUND (VOC)
CONTAMINATION IN GROUNDWATER SAMPLES

VOC CONTAMINANT	MONITORING WELL				
	OW-3S	MW85-1S	MW85-2S	MW84-4S	MW84-2S
2- BUTANONE			3.4, 8.9	68 J	22 J
1,1-DICHLOROETHANE	3.4 J	29			
TRANS - 1,2-DICHLOROETHANE		100	8 J, 2.6 J		
1,1,1-TRICHLOROETHANE		130			
TOLUENE			30, 9		

NOTES: ALL CONCENTRATIONS IN UG/LITER

DATA GENERATED DURING 1985 RI ACTIVITIES

J INDICATES AN ESTIMATED VALUE (COMPOUND DETECTED BELOW QUANTIFICATION LIMIT).

TABLE 12

FOREST WASTE: - RECREATIONAL USE SUMMARY

COMPARISON OF DAILY INTAKE TO ACCEPTABLE INTAKE
SUBCHRONIC (70 KG ADULT)

LAGOON	CHEMICALS WHICH EXCEED THE SUBCHRONIC ACCEPTABLE INTAKE AT 0.1 G/DAY
1	NONE
2	LEAD
3	NONE
4	LEAD
5	NONE
6	CHROMIUM (+6), LEAD
7	LEAD
8	LEAD
9	NONE.

TABLE 14

FOREST WASTE: - RESIDENTIAL USE SUMMARY

COMPARISON OF DAILY INTAKE TO ACCEPTABLE INTAKE
CHRONIC (70 KG ADULT)

LAGOON	CHEMICALS WHICH EXCEED THE SUBCHRONIC ACCEPTABLE INTAKE AT 0.1 G/DAY
1	NONE
2	LEAD
3	NONE
4	LEAD
5	NONE
6	CHROMIUM (+6), LEAD
7	LEAD
8	NONE
9	NONE.

TABLE 17 - COSTS SUMMARY

	ALTERNATIVE NO. 1	ALTERNATIVE NO. 2	ALTERNATIVE NO. 3
CAPITAL COSTS	$1,295,000	$646,000	$417,000
ANNUAL O&M	$0	$1,000	$500
30 YR. PRESENT WORTH	$1,295,000	$656,000	$422,000.

TABLE 19 - APPLICABLE ENVIRONMENTAL LAWS

LAW	SOURCE OF REGULATION	APPLICABILITY
FEDERAL		
FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)	RCRA SECTIONS 3001, 3004 3005; 40 CFR 264, AND 265 HSWA OF 1984 FEDERAL REGISTER, JANUARY 14, 1985 40 CFR PART 260	REGULATES THE GENERATION TRANSPORT, STORAGE, TREATMENT, AND DISPOSAL OF HAZARDOUS WASTE IN THE COURSE OF REMEDIAL ACTION. RCRA REQUIREMENTS MAY APPLY TO THE STOCKPILING, TRANSPORT, AND DISPOSAL OF EXCAVATED SOILS. ADMINISTERED BY MICHIGAN DEPARTMENT OF NATURAL RESOURCES (MDNR) UNDER MICHIGAN ACT 64
NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)	NEPA SECTION 102(2)(C)	CERCLA ACTIONS ARE EXEMPTED FROM THE NEPA REQUIREMENT BECAUSE EPA'S DECISIONMAKING PROCESS IN SELECTING A REMEDIAL ACTION ALTERNATIVE IS THE FUNCTIONAL EQUIVALENT OF THE NEPA ANALYSIS
STATE		
MICHIGAN HAZARDOUS WASTE MANAGEMENT ACT	STATE OF MICHIGAN ACT 64 OF 1979 AS AMENDED	REGULATES THE GENERATION, TRANSPORT, TREATMENT, STORAGE, AND DISPOSAL OF HAZARDOUS WASTE; MICHIGAN IS SEEKING AUTHORIZATION TO ADMINISTER RCRA IN THE STATE UNDER MICHIGAN ACT 64 RULE CHANGES
MICHIGAN SOLID WASTE MANAGEMENT ACT	STATE OF MICHIGAN ACT 641 OF 1978 AS AMENDED	REGULATES DISPOSAL OF NONHAZARDOUS SOLID WASTE
MICHIGAN DNR, ENVIRONMENTAL PROTECTION ACT	MICHIGAN ENVIRONMENTAL PROTECTION ACT 127 OF 1970 AS AMENDED	THIS ACT STATES THAT NO ONE CAN POLLUTE, IMPAIR, DESTROY, OR CAUSE HARM TO THE ENVIRONMENT. THE MDNR WOULD DETERMINE WHETHER THE PROPOSED CLEANUP LEVELS ARE CONSISTENT WITH THIS ACT.